

# SOME EXPORT MARKETING IMPLICATIONS OF NEW ZEALAND'S CURRENT PLANTING PROGRAMME

W. R. J. SUTTON\*

## *Abstract*

*A review of the developments in New Zealand leading to the establishment of exotic plantations in the 1920s and 1930s shows that, contrary to popular belief, they were planned and their future market (the domestic market) was identified. New Zealand now has to plan mainly for less certain export markets, and little has been done to identify the best market opportunities. Of the export options available for radiata pine, pulp and paper appear to have the least comparative advantage because of the ability of many other countries to expand production. However, given a future national energy shortage, wood otherwise suitable only for pulping always has a potential alternative use for the production of fuels. Profitable exports of logs and knotty sawn timber may continue, but again New Zealand will probably have competition. Clear-sawn timber (or plywood) from well-pruned and thinned stands is the only product that gives a distinct comparative advantage and for which attractive premiums can be expected. There is little possibility of New Zealand flooding the world market. Indeed the major problem will be to ensure that all suitable radiata pine stands are pruned.*

## INTRODUCTION

The exotic forest estate is currently expanding faster than at any previous time in New Zealand's history. The effect that the expansion will have on New Zealand is considerable and it is worth while to review some of the implications, especially the effect on marketing. For several reasons, but especially because of the many misconceptions, it is appropriate to begin with a brief review of the events which led to the first planting boom in the late 1920s and early 1930s.

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\*Forest Research Institute, P.B., Rotorua.

## FOREST PLANNING AND THE FIRST PLANTING BOOM†

The 1913 Royal Commission on Forestry reviewed the future demand for wood in New Zealand and concluded that the major demand would continue to be for sawn timber (for building and for containers in which to export agricultural products). The Commission's report recognised that not only were the indigenous forests incapable of continuing the supply but also that the indigenous tree species were unsuitable for afforestation. Future needs, it was believed, could not be satisfied by imports (since a world timber famine was expected) or by substitution. A large-scale afforestation programme was seen as the only means of supplying future needs. Of the possible afforestation species, radiata pine, with which New Zealand had already nearly 40 years' utilisation experience, clearly emerged as the most suitable. The Commission claimed that it ". . . will yield a really good second-class timber when from thirty to thirty-five years old" and, with some foresight, that had radiata been hardy in Europe it ". . . would long have been included as amongst the important timbers of the world".

The possibilities for wood exports were not considered by the Commission.

To implement the findings of the Royal Commission the State Forest Service was formed in 1919 and the 32-year-old Canadian, MacIntosh Ellis, appointed as the first director. In his major policy reviews of 1920 and 1925, Ellis laid the foundations for future development. He forecast that to meet future internal demand the State would need to plant 125 000 ha between 1925 and 1935. He also recommended large-scale plantings by private companies and local authorities.

The total area of exotic forests planted in New Zealand prior to the establishment of the Forest Service is estimated to be 76 000 ha. Of this, only 15 000 had been planted by the State, with practically none (only 0.4%) of it radiata pine. The remaining 61 000 ha was privately planted; radiata pine probably was the major species.

Although Ellis resigned in 1928 (in part because he could not get acceptance for his ambitious plan to plant 2 million ha of ". . . idle waste or deteriorated lands . . . over 25 years . . . [to] make New Zealand the principal wood-goods supplier to the Empire"), his initial plans were implemented, and by 1931 the target of 125 000 ha of State planting had been achieved.

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†Factual material in this section is not referenced. Readers wanting a more detailed referenced account should see the writer's unpublished thesis — Sutton, 1975.

It is a widely held belief that New Zealand's initial large-scale afforestation programme was a direct result of the great depression and that it was almost chance that brought together radiata seedlings and surplus labour. To believe this is to do New Zealand's forestry forefathers a great injustice, because it overlooks the sound planning on which the afforestation programme was actually based. In their original plans both the Royal Commission and the Forest Service identified their market (internal New Zealand), the product most likely to be required (sawn timber), and the species most likely to provide this (radiata pine). Trials in the early 1920s demonstrated that it was technically possible to make newsprint and paper products from radiata pine and other species, but the department believed that should pulp production units become feasible then wood supplies would come from sawmill waste and low grade logs.

The objectives and forecasts of the original plan have now been largely realised. The exotic forest that has been created has provided most of our wood needs. Sawn timber for building (but not for export containers) has continued to be the major end use and levels of consumption have been very similar to those predicted—*e.g.*, Ellis's 1925 policy review projected that demand for sawn timber in 1965 would be 1.64 million m<sup>3</sup> (sawn) — actual production was 1.63 million m<sup>3</sup>.

Radiata pine has justified the early reliance placed on it.

### *Contrast with the Present*

The historical aspects of forestry development in New Zealand have been dealt with at some length in order to contrast the level of planning that supported the initial afforestation scheme with that which supports the current major afforestation programme aimed at exports. As a nation we have not yet identified in detail what products and what countries will constitute our most profitable market. And yet we are currently planting at a faster rate than at any previous time. Contrary to popular belief it is, I believe, reasonable to claim that it is the forest managers of today and not those of 50 years ago who are largely relying on faith that a market will eventuate.

### EXPANDED PLANTING PROGRAMME AND FUTURE WOOD SUPPLY

In the period 1937 to 1960, New Zealand's exotic forest estate increased by an average of only 2000 ha per year. By 1970 the annual rate of increase had risen to 18 000 ha. By the mid-1970s the rate had more than doubled to 40 000 ha

per year. In addition, most of the old growth radiata pine forests have been clearfelled as have large areas of other species. Nearly all of the clearfelled areas have been re-established in radiata pine.

The effect this increased forest area will have on future wood availability is illustrated in Table 1.

TABLE 1: AVERAGE ANNUAL ROUNDWOOD SUPPLY  
(Based on a 30-year rotation)

<i>Period</i>	<i>Supply (in million m<sup>3</sup>)</i>					
1976-80	....	....	....	....	....	9.5
1981-85	....	....	....	....	....	9.5
1986-90	....	....	....	....	....	9.5
1991-95	....	....	....	....	....	12.7
1996-2000	....	....	....	....	....	17.7
2001-05	....	....	....	....	....	24.4
2006-10	....	....	....	....	....	33.4

Source: 1978 National Planning Model (H. H. Levack, pers. comm.).

As New Zealand's initial plantings of the 1920s and 1930s were large enough to guarantee self-sufficiency in wood, nearly all the increased volumes must be exported and/or marketed internally for other than traditional wood uses (e.g., for energy production). Because of the very low rates of planting in the period between the mid-1930s and the mid-1960s there is little scope for expansion of the wood supply until about 1990. Thereafter the volume will increase dramatically and soon after the year 2000 New Zealand is destined to have a forest industry producing nearly four times as much wood as now. The volume availability for export will increase over present levels by more than 20 million m<sup>3</sup>. Exports in the future will account for more than 70% of the wood supply.

Dramatic though these increases are by our standards they will be fairly insignificant on the world scene. The current world consumption of wood is estimated to be about 2400 million m<sup>3</sup> of which just on half (1200 million m<sup>3</sup>) is used industrially for uses other than fuel (FAO, 1976). Estimates of future demand vary considerably, but increases in world population and the energy crisis seem likely to increase the level of demand. New Zealand's 33 million m<sup>3</sup> just after the turn of the century will almost certainly be equivalent to less than 2% of the world's total demand for industrial wood. As will be shown shortly, the New Zealand supply could have a major impact if we choose to concentrate on a few specific products (e.g., newsprint).

Because the major increases in wood availability are at least another decade away it is tempting to ignore, for the present, the national implications of a greatly expanded forest industry. However, until recently we have tended to ignore the impact the increased wood volume is destined to have on the demand for labour, on the whole transport system (especially roading), on capital, and on energy. Because of the greatly increased volumes available for export, marketing must also be a major consideration. It is that aspect to which the rest of this paper is devoted.

### THE PROBLEM OF MARKETS

Because of our increased knowledge of silviculture, the problem of marketing is no longer the simple matter of finding profitable overseas markets for (at least) another 20 million m<sup>3</sup> a year. Since we now know that with timely silviculture we have the means of manipulating quality and providing products for a much wider range of end uses than was possible from the original untended radiata pine stands, we must consider these alternatives. *But* our research has also shown that the opportunities for major manipulation of crop quality are present only in the first 5 to 8 years of the stand's life. As stands age it becomes increasingly more difficult to control timber quality. This means that forest managers are, by their action or lack of action in the first 5 to 8 years, determining the future export opportunities of their stands. It is often argued that since we cannot predict with any certainty what the market will be in 20 years' time there is not much point in worrying about it. Appealing though this argument is, it ignores several important considerations:

- (1) That high quality trees can rarely, if ever, be grown unless management specifically aims to do so (and even then management may not achieve its objective).
- (2) For reasons that will be given shortly, we may face increasing difficulty in exporting large quantities of relatively poor quality wood similar to that currently being produced.
- (3) Even if markets are present for unpruned radiata pine we may have far more profitable outlets with pruned logs.
- (4) Probably most important of all is the corollary of our research findings, namely, that, since almost all the trees which our exports will have to compete with over the next two or three decades are slower growing than radiata pine, it follows that not only must they be already in

existence but also their quality is already determined. Thus there is practically nothing that can be done to improve that quality.

### THE MANAGEMENT OPTIONS

For New Zealand's radiata pine, three major single-product management options appear most likely:

- (1) Regimes for pulpwood and/or energy forests, *i.e.*, plant — no tending — clearfell early when volume production is at or near maximum.
- (2) Framing timber or log export regimes, *i.e.*, those involving thinning but not pruning.
- (3) Clearwood regimes, *i.e.*, those aiming to produce maximum volumes of clearwood by pruning and heavy early thinning.

It is realised that in the framing/log export regimes some pulpwood is also produced, and that in clearwood regimes some framing/utility logs as well as pulpwood are produced.

Given that New Zealand will have a future exportable surplus of about 25 million m<sup>3</sup>/year by about the year 2005 what is the export potential of the management options?

#### 1. *Pulpwood/Chipwood*

Although it is appreciated that only a few forest owners are currently seriously considering planting pulpwood crops, it is worth while to evaluate what the impact would be on markets if all the exportable surplus was made into pulp (or paper).

25 million m<sup>3</sup> of roundwood converted into pulp and paper products is equivalent to:

- 11 million tonnes of refiner groundwood pulp, or
- 8 million tonnes of newsprint, or
- 5 million tonnes of chemical bleached pulp, or
- 6 million tonnes of paper and paperboard other than newsprint, printing, or writing paper, or
- 5 million tonnes of printing and writing paper.

By current world-production levels these exportable surpluses would be substantial and would have a marked impact on world trade. For instance, the world production of mechanical pulps is about 29 million tonnes of which 1.4 million tonnes are currently traded. For chemical pulp, current world production is about 77 million tonnes of which 15 million tonnes are traded (FAO, 1976).

In the early 1970s there were optimistic projections for a greatly increased demand for pulp and paper products. However, since 1974 demand has declined and although there are indications of an improvement the pulp market is currently characterised by large stocks, under-utilisation of existing plants, and expansion of new plants. For example:

- World stocks of unmarketed pulp are now approaching three million tonnes despite the fact that mills are running at about 75% capacity (Haas, 1977).
- In Sweden, pulp exports are still 30% below the 1974 level (SPPA, 1978).
- Major expansion projects around the world will increase pulp-producing capacity in the period 1977-80 by 17.5 million tonnes (Bayliss, 1977a).
- By 1979 the capacity of thermo-mechanical pulp mills will have increased to 4.8 million tonnes from 2.2 million tonnes at the end of 1976 (Bayliss, 1977b).
- Brazil has planted 2.5 million ha of new forest since 1967, is currently planting 0.3 million ha/year, and plans to produce 6 million tonnes of pulp by 1982 (Haas, 1977).
- Chile and Australia have plans for major expansion of their pulp mills.

New Zealand has no distinct advantage over the traditional pulp producers in Europe and North America or over Australia, Brazil, or Chile. Further, we have to import expensive technology to build and maintain our pulp mills.

Even if a profitable export pulp and paper market does exist it does not necessarily mean that New Zealand should grow pure pulpwood crops. The cheapest and best quality sources of pulp raw material are residues from peeler plants and sawmills. If profitable markets exist for sawn or peeled material it would be better to grow stands primarily for these end uses and to supply the pulp requirements from the residues.

We do not appear to have any real *comparative advantage* in pulp and paper exports.

## 2. Framing/log export

At least 20 of the 25 million m<sup>3</sup> could be exported as logs. The only major importer of logs is Japan and her current imports of coniferous logs total about 20 million m<sup>3</sup>. Total log imports of all species were 41 million m<sup>3</sup> in 1976 (Anon.,

1977). There is considerable evidence that Japan will need to maintain this level of imports for the next 20 to 30 years. At present the bulk of Japan's coniferous log imports comes from the U.S.A. and U.S.S.R. Of these suppliers, the U.S.A. is unlikely to be able to maintain current levels of exports, and by the year 2000 may not have any surplus to export. The U.S.S.R., too, may not be able to maintain her exports, and even if she can it will only be with small and low quality Siberian larch.

Even if Japan remains a potential major market for relatively low quality sawlogs it should not be overlooked that:

- (a) South America, especially Chile, will also have large wood surpluses for export. Chile will be exporting radiata logs of a quality at least as good as our own.
- (b) The Japanese pay considerable differentials for quality, and appear not to favour our logs. Our prices are only slightly better than those paid for Siberian larch. There is every reason to believe that we could obtain a premium for quality pine logs on the Japanese market if we produced them.

If past export sales are any indication, our framing timber has been difficult to sell overseas. Despite her proximity, we have never exported to Australia more than 20% of her coniferous imports. The quality of our framing timber in the future will almost certainly be lower than that obtained from the old growth stands. Almost all of the world's remaining virgin forests and all of the regenerated stands will produce very acceptable framing timber. In many cases it will be of better quality than we will be producing from unpruned logs.

### *Pruned Sawlogs*

Only with pruned logs do we have the potential to grow an export product of very high quality — equivalent to the best grades of ponderosa pine in the U.S.A. and Scots pine in Europe and the U.S.S.R. We also have no foreseeable serious competition, as few countries have the potential to produce clear coniferous timber. To do so a country must have a suitable species which can grow to large size in a relatively short time. A country must also have the intent as well as the knowledge, capital, and labour to prune and thin its stands on time. Fortunately for New Zealand there are few species other than radiata pine which are either suitable for or capable of producing clearwoods. And, equally fortunately, those countries and states with large areas of radiata pine (Chile, Spain, New South Wales, Victoria, and South Australia) who with New Zealand account for 1.7 out of a total of 1.8 million ha of this



species plantations) have all chosen, at least for the present, not to prune their stands.

Even so, many have expressed doubts about our ability to find markets for clear timber. If all our stands were managed for the production of clears, the maximum production (including clear cutting lengths) would be about 3 million m<sup>3</sup> (or about twice the total exotic timber cut at present).

On the world sawn timber market, 3 million m<sup>3</sup> is relatively insignificant — the total world sawn outturn is currently around 450 million m<sup>3</sup> and is expected to be in excess of 600 million m<sup>3</sup> in the year 2000. Current production of clears and clearcutting grades is not known; one estimate for the U.S.A. was as high as 10 million m<sup>3</sup>/yr. With the passing of the old growth, the capability of U.S.A. to produce this volume must be greatly reduced. In Europe, too, clear coniferous timber is practically unobtainable and a ready market exists there now if we had clear radiata pine available for export (see Sutton, 1975).

The prices we could get for clear radiata pine appear to be considerable. Working back from present prices for clear grades of similar quality wood in North America and Europe, sawmillers in New Zealand suggest we can expect a premium over the equivalent of our Dressing Grade or No. 1 Framing of \$100 to \$130/m<sup>3</sup> (sawn). The premiums for clear plywood are probably even higher.

One question that is often posed is whether, assuming we have a ready export market for all the clear timber we can produce, we will be able to sell the remainder of the tree on the export market. Any attempt to answer that question should recognise that the quality of this wood will not be markedly dissimilar to that produced from the log export, framing, or pulpwood regimes.

The greatest immediate problem, assuming we wish to have clearwood available for export, is ensuring that stands scheduled for pruning are pruned, properly and on time. Even in State exotic forests, where the policy has been to prune, only 70% of the potentially prunable radiata pine stands established since 1950 have had their first log pruned. This does not include the major plantings of the 1970s since many of these have not yet reached prunable age.

#### FUTURE SUPPLY OF CLEARWOOD

Although most of the radiata pine planted after the war was pruned, the total area was so small that only very limited volumes of clears will be available until after 1995. Estimates of available clears from pruned stands on State forests for the period up to 1955 are:

Annual volume (in m <sup>3</sup> sawn) of clear timber				
		min. length 2.4 m	min. length 1.2 m	
1980-1985	....	....	25 000	35 000
1986-1990	....	....	65 000	100 000
1991-1995	....	....	100 000	150 000

What happens after 1995 will depend very much on what area of potentially prunable radiata pine is actually pruned. At the present rate only about a quarter of our young stands will actually be pruned. Production of 3 million m<sup>3</sup> of clears and clear cuttings will be possible only if every stand of radiata pine, on private as well as on State land, is actually pruned.

### CONCLUDING COMMENTS

The rapid expansion of New Zealand's forest estate is destined to have a profound effect on the whole economy. No matter what quality of wood we aim to grow, we may have problems processing and exporting some of the surplus. The problem of finding profitable outlets will be greatest for low quality pulpwood. Given the problems of future energy supplies, the probable lack of export markets for pulpwood may not be serious since we can always use this wood internally either as fuel wood or for the production of liquid fuels. Indeed, such wood is probably the only available large-scale source of raw material for liquid fuels. It is of doubtful economic sense, however, to grow crops purely for energy production when a readily marketable, high-priced export component could be extracted from them.

No marketing problems are foreseen for clear-sawn timber. The problem is going to be ensuring that the necessary pruning is done.

### REFERENCES

- Anon., 1977. Imports of foreign timber for 1976. *Jap. Lumber J.*, 18 (6): 12-5.
- Bayliss, M., 1977a. Expansions all around the world. *Pulp Paper Int.*, 19 (2): 43-54.
- 1977b. Thermo-mechanical pulp around the world. *Pulp Paper Int.*, 19 (6): 69-73.
- FAO, 1976. *Yearbook of Forest Products 1963-1974*. Food and Agriculture Organisation of the United Nations, Rome.
- Haas, L., 1977. Brazil's market pulp — will we be able to consume the huge tonnage planned for 1980? *Pulp Paper Int.*, 19 (5): 88.
- Sutton, W. R. J., 1975. An evaluation of New Zealand's Forestry Export Potential. D.Phil. thesis, Oxford (unpublished).
- Swedish Pulp and Paper Association, 1978. Review of the pulp and paper market. *SPPA Information No. 1* (1978): 1.