

THE LONG-TERM SIGNIFICANCE OF NEW ZEALAND'S EXPANDING AFFORESTATION PROGRAMME

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SYNOPSIS

New Zealand has a high potential for the production of exotic softwoods and by undertaking an expanded afforestation programme is planning to increase her export surpluses. These will be available in the form of timber, pulp and paper products. Current exports are at the rate of 30 million cubic feet per year, mostly to Australia. The exportable surplus available from existing plantations is expected to be over 45 million cubic feet by 1975 and the expanded afforestation programme will have the effect of enlarging this surplus to 150 million cubic feet in the year 2000. Thus, New Zealand should have the potential to increase considerably her future export of softwood products to Australia. As it is unlikely that Australia can make herself self-sufficient in softwood forests, the demand for New Zealand's surplus should exist. It is concluded that co-ordinated planning of the forests and forest products industries of Australia and New Zealand could be of mutual benefit.

INTRODUCTION

At the last Australian Timber Industry Stabilization (AUSTIS) Conference, J. Thomas presented a paper entitled "An Exotic Softwood Planting Programme for Australia". In it he made forecasts for the year 2000 of population, *per capita* consumption, and hence total wood demand. He came to the conclusion that the estimated requirements in the year 2000 A.D., some 800 million cubic feet, could easily be met by a combination of sustained yield from indigenous forests, a continuation of imports at much the present level, and the yield from exotic softwood plantations, which by then would have increased in area from 500,000 acres to the target figure of 1,200,000 acres. He did not discuss where the imports were to come from nor what form they would take, questions which for obvious reasons are both of no little interest to New Zealand.

Since then there have been further and more detailed forecasts made by the Forestry and Timber Bureau and the Economic and Statistical Department of the Australia and New Zealand Bank. These studies suggest that Australia's future wood deficiencies may be considerably greater than those envisaged by Thomas. As a consequence, either the import requirements will be higher than Thomas estimated, or the softwood planting programme necessary for self-sufficiency will be very much larger. Once again, these matters are of considerable interest to New Zealand. Indeed, they are far more than this; they are of far-reaching importance both to forestry in New Zealand and to the future economy of the country.

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New Zealand has itself made thorough and detailed long-term forecasts of future populations, trends in wood use, and future wood requirements. These have been done both regionally and nationally and have been translated into the land acquisition and planting programmes necessary for local and national self-sufficiency. However, New Zealand's planting programmes aim, as they have always done, not only for self-sufficiency but also for a considerable export surplus. An increased planting programme designed to maintain and to enlarge exportable surpluses has recently been given formal Government approval.

It is in the belief that New Zealand's plans in this respect should be of interest to Australian foresters and the Australian timber trade that the present paper is submitted for the 1962 AUSTIS Conference. The paper does not presume to suggest that Australia should or should not do certain things; traditionally, little brothers do not give their big brothers this sort of advice. Rather, the paper suggests that there is need for some fraternal co-operation and perhaps for more co-ordinated planning than there has been in the past.

FACTUAL AND HISTORICAL BACKGROUND

Indigenous Forest Resources

The indigenous softwood forests, mostly unamenable to regeneration or sustained yield management, are a diminishing asset. In the past they supplied most of New Zealand's sawn timber requirements; at present they supply approximately half; in the future they will make only a small contribution to saw logs and wood use generally, though it will be an important one.

The remaining merchantable indigenous forests total some 1,800,000 acres and they are being depleted at the rate of over 30,000 acres per annum. The remaining volume available, which, excluding reserves, is 1,800,000 cu.ft, would last only to the end of the century if exploitation continued at the present rate. The policy in respect to indigenous forests, however, is to encourage and enforce a progressive reduction of the cut, to set aside a hard core reserve in order to guard against a disaster in the exotic forest estate, and to cke out the remaining supplies over as long a period as possible. The indigenous softwood forests will therefore never be entirely liquidated and they will not in the future be quickly liquidated. For a long time to come and certainly for the next 50 to 60 years, they will help to provide for New Zealand's essential requirements in high quality joinery and dressing grades. Thus, although the indigenous timber industry does not itself enter into the subject matter of this paper, what happens to it is of extreme importance to future supply and demand balance sheets. Forward planning of exotic resources must and does take into account the volume of the indigenous resource and the rate of its liquidation. Indeed, New Zealand forest policy over the last 40 years has been based on this consideration more than on any other single factor.

Exotic Resources

To the best of our knowledge, New Zealand now has almost exactly one million acres of exotic softwood forests. We know the

productive area in State Forests with some exactitude but, pending the result of a National Exotic Forest Survey now nearing completion, we are not certain of the exact area in company, local body and private forests. Nevertheless, one million acres is an accurate enough figure for the purposes of the present paper. This comparatively large total highlights New Zealand's relative wealth in exotic softwoods compared with Australia. New Zealand has one million acres for 2½ million people or two-fifths of an acre per person. By contrast Australia with 500,000 acres for ten million people has only one-twentieth of an acre per person. Our *per capita* ownership of exotic forests is thus eight times as great.

The approximate species breakdown of New Zealand's one million acres is given in Table 1.

TABLE 1: APPROXIMATE SPECIES COMPOSITION OF EXOTIC SOFTWOOD FORESTS IN NEW ZEALAND

Species	Figures in 1,000 acres		Total
	State	Other	
Radiata pine	210	450	660
Corsican pine	60	10	70
Ponderosa pine	65	5	70
Douglas fir	55	10	65
Other and mixed species	110	25	135
Total	500	500	1,000

New Zealand would like to have a still higher proportion of radiata and Douglas, and recent plantings have been designed to bring this about.

As is well known, the age class distribution of New Zealand's exotic forests is bad. Of the total area, some 840,000 acres were planted prior to 1940, the great bulk being established in the afforestation boom years of 1925 to 1935. Plantings were on a modest scale only during the war and immediate post-war years, averaging (in State Forests) some 2,600 acres per year for the decade 1940-1949. As Table 2 shows, they have doubled in each of the two succeeding quinquennia.

As well as illustrating the recent rapid growth in State-owned planting, the figures in Table 2 are of interest as an indication of the magnitude of the planting effort by private individuals and company forests. It is of some significance that the private forestry sector has sufficient faith in the future of exotic softwoods in New Zealand to plant at a rate now approaching 8,000 acres per year.

The utilizable yield from New Zealand's existing exotic forests is at present estimated to be between 140 and 150 million cu. ft, compared with an actual cut (in 1961) of 111 million cu. ft. By 1975 it is estimated that the yield will rise to 180 million cu. ft by the year 2000 it should be 205 million cu. ft.

Current Forest Utilization and Wood Use

Table 3 summarizes production and trade in forest products for the year ended March 31, 1962, and gives totals for a number of previous years.

TABLE 2: AREAS PLANTED IN EXOTIC FORESTS IN NEW ZEALAND, 1950-1962

Calendar Year	Area Planted — Acres		Total
	N.Z. Forest Service	Other*	
1950	4,100	4,000	8,100
1951	5,000	4,300	9,300
1952	5,700	4,500	10,200
1953	4,900	3,600	8,500
1954	5,300	4,700	10,000
1955	6,700	5,700	12,400
1956	7,000	7,100	14,100
1957	8,500	7,100	15,600
1958	7,100	6,800	13,900
1959	7,100	5,500	12,600
1960	9,600	6,900	16,500
1961	11,800	7,000	18,800
1962 Estimated	14,400	7,000	21,400

* "Other" includes planting by companies, local bodies and farmers. These figures are estimated.

TABLE 3: PRODUCTION AND TRADE IN FOREST PRODUCTS, YEAR ENDED MARCH 31, 1962

Category	Volumes in Million Cubic Feet			Imports	Exports	Apparent Consumption
	Production		Total			
	Indigenous	Exotic	Total			
Logs for export	—	9.2	9.2	—	9.2	—
Sawn timber	51.9	76.3	128.2	6.2	6.4	128.0
Pulp and paper products	—	40.6	40.6	11.4	17.9	34.1
Peelers	1.5	0.5	2.0	0.3	—	2.3
Smallwood and miscellaneous	1.2	3.0	4.2	1.5	—	5.7
Total roundwood equivalent	54.6	129.6	184.2	19.4	33.5	170.1
Less Sawmill waste used in pulp production	—	11.8	11.8	—	3.0	8.8
Total net roundwood						
1961-62	54.6	118.8	172.4	19.4	30.5	161.3
1960-61	57.0	112.0	168.7	17.4	29.5	156.6
1959-60	59.0	104.0	163.0	14.2	31.0	146.2
1950-51	58.0	42.0	100.0	16.1	4.3	111.8

It will be seen that, whereas indigenous production has remained static or dropped only slightly, the production from exotic forests has nearly trebled in the last decade and the export of exotic forest products has increased to an even greater degree. The figures are a reflection of the revolution that is taking place in New Zealand forest industries. Up till the late 1930s New Zealand's timber requirements came mainly from the shifting exploitation of the indigenous resources by small-scale circular-saw mills. Since then the increasing availability of wood supplies from exotic forests has led to the

establishment of additional industries in the form of highly capitalized plants for the integrated production of timber, pulp and paper, and veneer. The success of these industries has highlighted, first, the favourable conditions in New Zealand for the growth of exotic softwood forests, secondly, the contribution which forest-based industries can make to much needed exports and to the national economy, and, thirdly, the scope that exists for the further exploitation of exotic forests and exotic forest industries. Other points to note from the above figures are:

- (a) New Zealand has changed rapidly from being a large net importer of forest products to being a net exporter on a considerable scale. In terms of volume the change occurred in 1956.
- (b) The bulk of New Zealand's forest products exports are in the form of sulphate pulp and newsprint, although sawn timber is exported in some quantities.
- (c) The trade in radiata logs to Japan reached a surprisingly high figure in 1961 but is unlikely to continue at this level.
- (d) The *per capita* consumption of timber reached the all-time high of 292 board feet per annum in 1960. It is improbable that *per capita* consumption will remain at this high level.

Review of Forward Wood Requirements

New Zealand has made comprehensive and detailed studies, both regionally and nationally, of trends in wood use and the factors likely to affect the future demand for forest products. The studies indicate that the forward requirements up to the year 2000 should be approximately as shown in Table 4.

TABLE 4: ESTIMATED FORWARD WOOD REQUIREMENTS

	1960 (actual)	1975	2000
BASIC PROJECTIONS			
N.Z. population trends	2,377,000	3,150,000	4,850,000
N.Z. <i>per capita</i> consumption of sawn timber—			
in board feet	292	230	210
in cubic feet	53	44	37
	<i>Volumes in Million Cubic Feet Roundwood Equivalent</i>		
NEW ZEALAND DEMAND			
Milling timber	127	141	184
Pulp products	28	42	76
Other forest products	5	8	12
	160	191	272
<i>Minus</i>			
Imports	17	13	14
Salvage (slabs, waste paper)	9	13	24
TOTAL NEW ZEALAND DEMAND	134	165	234
<i>Less</i> Indigenous supply			
DOMESTIC DEMAND FOR EXOTIC ROUNDWOOD	81	135	222

Exotic Forest Balance Sheet

Figures have already been given showing the estimated yields from existing forest areas. Combining these with those in Table 4, it is possible to draw up the rough supply and demand balance sheet given in Table 5.

TABLE 5: ESTIMATED FORWARD WOOD SUPPLY AND DEMAND

	<i>Volumes in Million Cubic Feet Roundwood Equivalent</i>		
	1960	1975	2000
Domestic demand	81	135	222
Estimated yields	145	180	205
Surplus available for export	64	45	17 (deficit)
Actual exports	30	—	—

It will be seen that, despite the large current excess of growing stock, New Zealand's exportable surplus *based on existing areas* will dwindle to 45 million cu. ft by the year 1975 and will disappear entirely before the turn of the century. However, should further pulp and paper markets develop and the industries expand to meet them, the export figure in 1975 could be considerably higher, even though this could entail greater imports of sawn timber and other products.

THE PLANTING PROGRAMME AND ITS SIGNIFICANCE

Export Considerations

At this stage it can be stated in no uncertain terms that New Zealand has no intention of resting on past afforestation laurels and accepting a static or even a modestly increasing exotic forest area. Our forefathers took a gigantic act of faith and gave us an exotic forest estate far greater than could ever be used domestically in its life-time. That this act of faith has been amply justified is evident in the facts already given of the current exportable surplus and the industries which have been launched to supply both domestic and export demand. Over the 30 to 40 years for which they will last, these surpluses will total in all nearly 1,000 million cu. ft. As a potential source of wealth this is no mean figure by any standard and by antipodean standards it is enormous.

More than most other countries, New Zealand desperately needs this type of wealth—one which can provide a raw material base for domestic industries, which can diversify its predominantly agricultural economy, which can increase its export potential, and above all which can diversify its range of exportable products. If it is to maintain and safeguard its standard of living, New Zealand just cannot take the risk of allowing the exportable surplus of exotic forest products to dwindle; and we cannot even allow it to remain static. We must look to a continually expanding export industry in forest products as a major means of creating local employment, of earning and conserving overseas funds, of correcting imbalances in trade, and generally of strengthening and diversifying the economy. We must therefore embark on another large planting programme.

This time we do not have to take such an act of faith to do so; we have proved that exotic forests can be grown successfully in New Zealand, we have proved that the raw material produced can be successfully converted into saleable products, and all the economic signs point to the fact that it should, even that it must, be done.

Expanded Planting Programmes

These considerations have been in the mind of New Zealand foresters for some time now and they are reflected in the increasing planting figures shown for the years 1960, 1961 and 1962. It is only recently that the economic and exports potential of exotic forests has become so obvious to bankers, economists, journalists and the public generally. There are probably two main reasons for this—first, the proof in the form of export earnings and savings of overseas funds which the large-scale integrated industries have now provided, and, secondly, the growing fears for the future economy of the country which the E.E.C. threat has engendered. Whatever the reasons may be, Governments have now officially accepted the thesis that an expanded afforestation programme is economically desirable and may even be economically essential; and they have given the green light to go ahead.

Specifically the approval, given first by the Labour Government in November, 1960, and confirmed by the present Government in June, 1962, is to establish another one million acres by the year 2000. This will involve a total planting programme, State and private, of 25,000 acres annually. As we cannot be certain if the private sector will continue planting at its present rate, nor how much of its planting will be truly effective, the annual target for State planting will be 20,000 acres. This will be reached in 1964 and all the necessary work of seed collection, nurseries, land acquisition, and land preparation is well under way.

In deciding on the location of the new forest area, the considerations which have been taken into account are the need to create smaller local forests to provide for regional self-sufficiency and simultaneously to establish national forests designed primarily for export. Fortunately, despite some local land use conflicts with agriculture, New Zealand has a sufficient area of suitable land to do both. Of more importance, there are suitable areas available large enough in extent and reasonably close to deep-sea ports for the establishment of national forests. The particular localities are the Nelson District, south of Dunedin, North Auckland, and an extension of the already considerable exotic forests on the central North Island pumice plateau.

The over-riding aim in selecting new areas for planting is to choose sites which are biologically and edaphically suitable for the two main species to be planted, radiata pine and Douglas fir, and which at the same time lend themselves to reasonably cheap logging and to cheap transport to centres of utilization or to deep-water ports.

In addition to approving a large increase in State planting the Government has also taken positive and, for New Zealand, radical steps to encourage private planting, particularly on farms. This takes the form of a suspensory loan scheme whereby on approved

properties loans of up to £40 an acre are available to offset the costs of planting, with provision for suspending half the loan in 20 years' time if establishment, maintenance and tending have been satisfactory. It is hoped that this scheme, which will have an upper limit of 10,000 acres per year, will give a big fillip to farm forestry and to better and more integrated land use on individual properties. If successful it could play a major part in ensuring future raw material supplies both for local consumption and for export industries.

Effects of Further Plantings

The immediate aim of additional plantings is to create a potential growing stock large enough to justify a continually increasing cut from the existing forests. By so doing, the trend of a decreasing exportable surplus will be halted and finally reversed. Immediately the export target is for 53 million cu. ft in 1975 compared with the present 30 million cu. ft. It is envisaged that this will be made up as follows (in million cu. ft — roundwood equivalent) :

Sawn timber	.....	.....	.....	.....	.....	.....	.....	15
Newsprint	.....	.....	.....	.....	.....	.....	.....	25
Other paper	.....	.....	.....	.....	.....	.....	.....	7
Chemical pulp	.....	.....	.....	.....	.....	.....	.....	6
								—
								53
								—

With its small capital investment in plant, sawn timber production is capable of more rapid expansion for export purposes than are pulp or paper products. Radiata pine will continue to be the main species available for sawn timber export but soon New Zealand will be able to supply increasing quantities of Douglas fir (oregon) which should be fully competitive with supplies from North America. Depending upon the speed attained by the second newsprint machine now being installed at Kawerau, it is possible that newsprint exports will be higher than envisaged and thus that total exports may exceed 53 million cu. ft in 1975. Whether or not this happens, the higher proportion of newsprint being exported should result in a spectacular increase in export earnings — from £7.5 million in 1961 to £22 million in 1975.

Long term, it is conservatively estimated that the additional planting envisaged will produce an annual exportable surplus of 150 million cu. ft and this is the target set for the year 2000. Reference to past annual reports of the Forest Service will show that New Zealand has always planned for a continuing export surplus of 50 million cu. ft. All that has now happened is that as a matter of both forest and Government policy the export target has been trebled.

Logic in Expecting to Supply Australian Market

Long term, a variety of markets should be available throughout south-east Asia for high quality softwood produce. Foremost among these markets is that of Australia and short-term this market is much larger than New Zealand could possibly hope to satisfy. Australian forest products deficiencies, mainly in softwoods, are currently of the order of 100 million cu. ft a year. It has been pointed

out by the Forestry and Timber Bureau (in the special National Progress Report for Australia prepared for the Sixth Session Conference of Asia-Pacific Forestry Commission, 1962) that the extent of future deficiencies is not known but that by 1975 imports of forest products will probably increase by 50%. Other estimates prepared in 1961 by the Economics and Statistical Department, Australia and New Zealand Bank Limited, are that by 1974-75 timber imports will be at least 500 million super feet. Assuming that 70% of these timber imports are softwoods, the roundwood requirements for this fraction at the supply end would be approaching 60 million cu. ft.

From the foregoing it is evident that the Australian import requirements are large. Moreover, whatever plans may now be laid for increased exotic softwood planting in Australia, the limited and youthful existing resources there, totalling at present a little more than ½ million acres, mean that there will be no prospect whatever of eliminating these deficiencies before the turn of the century. By contrast, New Zealand already has an expanding surplus of exotic softwoods for export, and as Australia is her closest neighbour—being less than three weeks away from date of order—she can naturally expect to compete in contributing supplies.

Looking again at the national surpluses and deficiencies of forest products, it is evident that Australia and New Zealand, grouped together as Oceania, must be regarded as "net importers". This matter is important in that both countries must continue to make sizable imports. Australia must do so mainly because of her overall deficiencies and New Zealand because of her smaller domestic market which tends to limit the range of products which it is economic to produce. It is therefore worth considering to what extent the two countries can be of mutual support by concentrating on producing those commodities which they can manufacture most efficiently, by endeavouring to import their remaining needs from each other, and by seeking supplies from other sources only of those commodities which neither can produce efficiently or in sufficient quantity. This arrangement could have several direct advantages in the field of pulp and paper products but there could also be significant advantages with sawn timber products. Moreover, it must be borne in mind that the costs of producing most classes of forest produce are closely linked and measures which help to improve the efficiency of any one sector of the industry should be of overall benefit.

Another matter of special concern to both Australia and New Zealand is their various balances of trade. The balance between Australia and New Zealand has for many years been very heavily in Australia's favour.

Relevant 1961 figures are:

	£(A)
Total imports by N.Z. from Australia	62.0 million
Total imports by Australia from N.Z.	17.4 „
Timber imports by Australia from N.Z.	1.4 „
Pulp and paper imports by Australia from N.Z.	7.9 „
Total forest products imports by Australia from N.Z.	9.3 „

Source: Commonwealth Bureau of Census and Statistics, Australia.

It is no secret that to New Zealand these figures are most disappointing, whereas to Australia they mean that, on a population basis, New Zealand is by far her best customer. There would appear, therefore, to be sound trade reasons why exports of forest products from New Zealand to Australia should increase, not merely as an increase to be related to the expansion of total imports but as a positively increased share in the Australian market.

CONCLUSION

By greatly increasing her afforestation programme, New Zealand is actively engaged in developing resources for expanded exports of long-fibred pulp products and softwood timber. Short term the most obvious market is that of Australia but this does not suggest that Australia and New Zealand should be viewed as direct competitors. However one may assess the future prospects of Oceania and greater South-east Asia, the least likely development is excess forest and mill capacity in the production of softwoods. This is clearly borne out by the current Australian deficiencies and these alone far exceed the volume of exports New Zealand could possibly hope to supply. Thus, as "net importers" the emphasis for the Australian and New Zealand industry must surely be on maximum efficiency in overall production. As a joint policy it is suggested this could greatly help towards the optimum development of the forests and forest products industries in both countries.