

AN AUSTRALASIAN STRATEGY FOR PLANNING FUTURE WOOD PRODUCTION

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THE SCOPE OF THE STRATEGY

At least three terms in the title stand in need of definition — Australasian, strategy and wood production.

The management of forests for wood production does not mean that other uses of forests are ignored or are considered to be secondary, but rather that the non-wood aspects are taken into account as constraints on management for wood.

Australasian is a fairly loosely used term which here is taken to include Australia, New Zealand, Papua New Guinea and the Pacific Islands.

Strategy, however, is not so easily disposed of. The term seems to have crept into planning literature almost un-nounced. Hirschman (1958) was an early user, and, in the last decade or so, strategy has become quite popular, in the sense of a statement intermediate between policy and plan — rather more specific than a policy, rather less directed than a plan. Ansoff (1965) indicates that the planning use of the term "strategy" was adopted from game theory. The concept of a strategy as one of a number of courses of action open to a player, seems to be in line with the policy-strategy-plan sequence. It is, therefore, the sense in which a strategy is considered in this paper.

One final point by way of introduction remains. The title could be construed as a question — *should* there be an Australasian strategy for planning wood production? In that form it raises a fundamental issue — *could* there be an Australasian strategy? In some ways that way of looking at the topic could be more important than considering what form an Australasian strategy should take. In this paper, however, it is assumed that the answers to both questions are affirmative, but with reservations as far as the second is concerned. Thus, an attempt is made to formulate a course of action for Australia, New Zealand, Papua New Guinea and the Pacific islands for the development and management of forests for wood production.

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ALTERNATIVE VIEWS OF THE FUTURE INFLUENCING STRATEGY

From the definition of strategy adopted, two steps are involved in deriving a strategy for wood production. First it is necessary to identify the possible courses of action, and then to choose one of them as the strategy to follow.

Since action is concerned with the future, identification of the possible courses of action calls for some view of what the future holds, over some specific period of time. In the case of wood production forestry, the relevant future could range in length from the immediate (with respect to forests that are mature in a technical sense) to the rotation (with respect to forests that are being or are to be established). These short and longer term futures in forestry, are closely linked through the time jointness of the supply curve for standing timber (Gregory, 1955) so that a rotation length view of the future — say, 30 years — is unavoidably the relevant time period for strategies in forestry.

All sorts of futures, as science fiction shows, can be envisaged. Two quite contrary views within the range of possibilities are particularly relevant to developing a strategy for planning forestry development. Extrapolations from current trends suggest, in one view, that continued economic growth at anything like the recent rates cannot be sustained; and, if pursued without restraint for much longer, must eventually lead to global collapse. In contrast, countering the arguments of the collapse view of the future, leads to an outlook of sustained and sustainable economic growth for quite a long time into the future.

According to which of those two opposing views of the future is adopted, rather different types of strategy would appear to be called for. The sustained expansion future would indicate aggressive strategies for increasing wood production resources and expanding wood using industries to take advantage of the growing markets. The major variants of the expansionist strategy would reflect different views of the associated changes in the composition of the rising demand for wood and consequential locational effects and the extent to which market shares could be changed.

The ultimate collapse — or Doomsday — view would indicate strategies aimed at averting or postponing collapse. The major variants of the defensive strategy would arise from differing views regarding the time until collapse would occur, the factors ultimately triggering collapse, and the timing and nature of the measures that would avert collapse.

It is obvious that no defensive strategy could stop expansion immediately. The only thing that could do that would be an early onset of collapse. Failing that, the two opposing views of the future then cover a common expanding path for some time into the future. For how long that common path will hold depends on how long it would take

- (a) To devise, reach agreement on, and put into effect a universally accepted and effective defensive strategy, and
- (b) For the braking mechanism in that strategy to have its intended effects.

Neither of those two developments is likely to occur rapidly. It might safely be assumed, therefore, that the relevant time horizon of 30 years for an Australasian strategy could cover a substantial, if not a complete, period of continued economic expansion, provided the current economic situation does not induce an early, if somewhat different, form of collapse. However, it does not necessarily follow that an aggressive, expansionist strategy is therefore the appropriate one for Australasian forestry. Because of the long length of the production period in wood production forestry, such a strategy would be appropriate only for those forests which would reach technical maturity during the period in which continued growth was common to both views of the future. However, because of the time-jointness of the forest supply curve, it may be a more appropriate strategy to *hold* forests for the future, rather than to use them as soon as they are technically mature, in order to increase, say, their biomass contribution to a global defensive strategy. On the other hand, it may be a more appropriate defensive strategy to (a) utilize the forests in developing countries now in order to accelerate economic development there; while (b) conserving them in advanced countries to reduce economic growth and halt environmental deterioration there; while (c) creating additional forests in both groups of countries for environmental improvement.

It seems that a view of the future which accepts the collapse version must, to be consistent, adopt a defensive strategy. There is no alternative. The trouble with that approach is that nobody really knows enough about the collapse path in terms of the effects of the nature, size, location or treatment of forests on the elements of the collapse mechanism, to propose any strategy other than to leave the forests alone. And that strategy may not only be ineffective; it may even be wrong.

In contrast, a view of the future that rejects collapse, at least over the next couple of centuries, does offer alternatives. It may lead to an aggressive strategy, but not as a necessary

consequence of the view. Given such a view of the future it would therefore be possible to adopt a mixed strategy — to opt in other words, for continuation of economic growth, but to hedge against the possible emergence of solid evidence for the collapse view. In fact, a mixed strategy may be more than just advisable; it may be necessary. Conceivably a collapse avoidance strategy would eventually involve the substitution of a technology based on renewable resources in place of the present fixed resource based technology. An expansionist forest strategy could thus become an essential element of a growth contraction strategy.

On the whole, therefore, it seems appropriate to draw a strategy based on a future of expanding demand for wood, within the limits of an expanding need for forests in their macro- and micro-environmental roles. The present tendency for the immediate urgency of economic difficulties to overshadow the longer term environmental issues does not mean that the environmental issues have disappeared or that the problems have solved themselves or that they are no longer important. They are still there and they are still important. They certainly cannot be shelved indefinitely or even for the thirty-year time period under consideration.

LIMITS TO THE STRATEGIC POSSIBILITIES FOR WOOD PRODUCTION

An outlook for Australasian forestry of an expanding demand for wood products combined with an increasing need for the environmental services of forests points towards an expansionist strategy. But it is not a strategy in itself. It is no more than a statement to the effect that widely applied and intensified multiple use forest management is necessary. Unfortunately, multiple use is still much more of a desirable goal or even a slogan than it is an effective strategy. The difficulty with multiple use is rarely about what to do. That is usually fairly obvious. The real difficulty lies in two problems: how to do what needs to be done, and how to ensure that it actually gets done.

An Australasian strategy of wood production under multiple use management must go some way towards solving those two problems. That, however, is only one aspect of specification of the strategy; before turning to the specification problem it is necessary to estimate the limits of the zone within which the possible strategies lies. Some fairly definite limits to the feasible zone are set by the relationships between forests and their outputs; between forests and their treatment; between forests and other land uses; between social groups at a wide range of levels; and between the Australasian region and the

rest of the world. Their interactions govern what options are left open.

From the point of view of forests as biological and technical entities, the set of relationships assumed in this paper includes the following:

- (1) The land area available primarily for wood production within the Australasian region, as for the world, is more likely to decrease than increase or remain constant.
- (2) Forests maintained for macro-environmental influences will probably need to be in large continuous blocks.
- (3) Forests for some micro-environmental purposes will need to be scattered rather liberally throughout agricultural and urban areas.
- (4) Environmental quality is probably lowered in total, when natural forests are replaced by simplified man-made forests, even if there is no reduction in total forest area.
- (5) Environmental quality is probably raised by afforesting deteriorating bare land, even when the afforestation is by exotic monospecific plantations.

All of these relationships are probably debatable. More importantly, for present purposes, some of them are clearly incompatible. A need for increased productivity in terms of wood follows from the decreasing land constraint. This probably involves simplified forest systems and, in particular, high yield plantations. But, under the assumed relationships, that would bring about some reduction in total environmental production. Large blocks of high yield, relatively uniform forests are, by present standards, needed to meet the technical and economic requirements of wood supply for modern forest industries. But the provision and utilisation of forests of that type involve, again, some lowering of total and local environmental quality, while at the same time a fair amount of the potential supply could lie in the scattered small forests provided for local environmental purposes.

Unless the strategy is at one of the extremes — complete primacy for environmental values or complete primacy for wood production — some compromise is inevitable. The range of options accordingly is limited to whatever are acceptable compromises.

In considering the relationships of forests to society and of global societies to societies within the Australasian region, the important point is that, whatever forests are managed for, it is ultimately for the benefit of man. One of those benefits is the group of effects termed economic development.

There is no doubt that a forest resource can be managed so as to give a major boost to accelerating economic development (Youngson, 1959; Westoby, 1962). The potential is released primarily by industrial utilisation at the point where processing takes place, rather than by the utilisation of the forest *per se*. Thus for the development potential to have an appreciable and lasting effect on the country or area where the forests are grown, the processing industries have also to be located in that country or area. However, it is now debatable, to say the least, whether economic development as currently measured, beyond a certain level, is a benefit or the reverse. In two of the countries of the Australasian region — Australia and New Zealand — that point, judging by the furore, may well have been reached. But for the other countries it is a long way off. So a set of forestry-society relationships covering the following could be postulated:

- (a) Expansion of wood production is likely to produce greater positive net benefit the more it is concentrated in the developing countries or sub-regions of Australasia.
- (b) Expanded wood production in a given country will have little impact on economic development in that country, unless it is accompanied by a corresponding increase in wood processing capacity in the country or state where the forest resource is located.

Before the relationships can be taken as constraints, another set of society-society relationships has to be considered. These, being the political ones, are likely to be overwhelming. Only if the degree of intra-regional re-distribution of forests and forest industry expansion implied by the two conditions were politically acceptable would they become constraints.

The chances of that occurring through Australasia-wide political agreement are fairly low. Henry (1972) showed, in effect, the virtual impossibility of developing a nationally oriented policy, through the political process, even in a single country, so long as constitutional responsibility for forests is retained by a number of constituent, co-equal governments. It would hardly be easier to achieve in a multi-national Australasian group than in the multi-state Australian federation. It is not that the institutional mechanisms do not exist. The Australian Forestry Council, the joint Consultative Council on Forest Industries under the New Zealand-Australia Free Trade Agreement, the South Pacific Forum, are all nuclei, at various levels, for working out a co-ordinated and co-operative forest development strategy for the Australasian region. Despite its successes in a number of fields, the Australian Forestry Council has brought Australia no nearer to a nationally agreed strategy

TABLE 1: ESTIMATED COMMERCIAL FOREST RESOURCES OF REGIONS OUTSIDE AUSTRALASIA BY AREA, GROWING STOCK AND INCREMENT AGAINST INDUSTRIAL ROUNDWOOD REMOVALS IN THE YEARS 1975, 1985 AND 2005

Region	The Resource									Industrial Wood Removals								
	Area (million ha)			Growing Stock (million m ³)			Increment (million m ³)			Consumption			As % of G.S.			As Ratio of Increment		
	1975	1985	2005	1975	1985	2005	1975	1985	2005	1975	1985	2005	1975	1985	2005	1975	1985	2005
W. Europe	120	120	110	9 000	9 000	9 000	310	320	320	230	300	400	2.4	3.5	4.1	0.74	0.94	1.25
N. America	630	610	580	36 000	34 000	30 000	800	800	810	480	620	900	1.2	1.8	3.0	0.60	0.78	1.11
Japan	25	25	25	2 000	2 200	2 500	80	90	100	110	130	170	5.5	5.9	6.8	1.38	1.44	1.70
U.S.S.R.	760	750	700	73 000	70 000	65 000	840	800	820	300	400	700	0.4	0.5	1.1	0.36	0.50	0.85
E. Europe	35	35	30	3 500	3 500	3 800	90	100	100	70	80	100	2.0	2.3	2.6	0.78	0.80	1.00
Asia Far East (excl. Japan)	360	320	180	40 000	35 000	15 000	250	200	150	110	190	300	0.3	0.5	2.0	0.60	0.95	0.50
Africa	680	560	350	32 000	25 000	12 000	100	120	100	30	50	100	0.1	0.2	0.8	0.33	0.42	1.00
Latin America	650	530	320	124 000	110 000	90 000	400	350	320	50	120	300	0.04	0.1	0.3	0.13	0.34	0.94
Middle East	5	5	5	100	100	100	—	—	—	15	30	50	15.0	30.0	50.0	—	—	—
Total:	3270	2960	2300	320 000	290 000	230 000	2870	2780	2720	1395	1920	2660	0.4	0.7	1.2	0.49	0.69	0.98

Sources: Compiled, adapted and extrapolated from FAO 1972, 1973, IBRD 1972; Pringle 1973; Persson 1974.

than it was before the Council existed. That does not augur well for the effectiveness of the other existing bodies in developing an Australasian approach to an Australasian strategy. A dismal conclusion is almost unavoidable. An Australasian strategy will have to be developed as the sum of the number of individual state and country strategies, with little more co-ordination than calculation by each state of the effects on its strategy of what it knows of other states' strategies.

In the light of that conclusion, unless Australasia is unrealistically assumed to be a closed system, some account needs to be taken of the wood supply-demand situation in the rest of the world. Since the situation will certainly change from what it is now over the time span considered, some forecasts of how much it will change are also involved.

Although it is now commonplace for national outlooks for forestry and forest products to consider the end of the century or beyond, few regional or world outlooks venture beyond 1985. The global outlook presented in Table 1 is therefore based on personal extrapolations and estimates from the trends in a variety of sources relating current and future resource and consumption levels (*e.g.*, FAO, 1969, 1972, 1973; Richardson, 1970; USDA, 1973; Persson, 1974; etc.).

While very little notice can be taken of the figures themselves, the trends and relationships could be of the right direction and order. From them, the following considerations have therefore been added as components of the strategic situation:

- (6) World forest resources will decline in area and in wood production capacity while world wood consumption will continue to rise, but no world deficit of wood supply will emerge during the 30-year period under consideration.
- (7) However, there will be a general tightening of supply, so that the deficits will intensify in the current wood-deficit regions, some additional regions will move into or close to deficit status, and world deficits of certain categories of wood (high quality tropical hardwood logs) will develop.
- (8) The depletion of the global forest resource will be concentrated in the tropical countries where "land hunger" will enforce transfers on a large scale of forest land to agriculture so that there will be a marked decline in the amount and range of tropical woods in the world supply as well as losses of major blocks of complex tropical forest ecosystems.
- (9) Apart from the local and global environmental effects of the reduction in the tropical forest resource, some of the

major wood exporting regions (*e.g.*, West Africa, South East Asia) will decline in significance by the end of the period, so that trade patterns, trade links and trade levels will change markedly as importing regions adjust to the changing supply conditions.

From this sketchy, simplified and possibly pessimistic review of the strategic situation, three basic conditions limiting an Australasian strategy stand out.

The first of these conditions is that an Australasian strategy will have to be drawn largely as a set of relatively independent strategies, developed by each of the individual governments having constitutional and operational responsibility for forest policy and management.

The second is that the strategy in each state or country will have to compromise between wood production and environmental objectives, with the nature of the compromise and the point of balance varying between and within countries and over time, according to the extent that economic development is regarded as a positive net benefit.

The third is that the strategy will have to be drawn in the light of narrowing opportunities for net imports into the Australasian region, particularly towards the end of the period, but correspondingly widening, opportunities for net exports.

SPECIFICATION OF AN AUSTRALASIAN STRATEGY

The general strategy for Australasia was earlier described as a large-scale application of multiple use forest management, with the main emphasis on application. The only modification arising from the above review of the limits is that the general strategy has to be applied state by state rather than developed in an Australasian context. As was seen, application of multiple use management raises two basic problems relating to practice that a strategy must solve. But there are also other aspects which must be specified before the strategy has been formulated. These can be put in another set of questions:

- (1) How much expansion of wood production should be aimed for?
- (2) Where should that expansion be located?
- (3) With what types of forests, what species and under what management techniques should the expansion be undertaken?

- (4) Over what time span and with what timing should it proceed?
- (5) Who should be responsible for the programme?

To set out an Australasian strategy that answers those questions for each of the governments involved is clearly impossible in this paper. Therefore the Australasian strategy proposed is developed by considering the questions in a general way in relation to the countries concerned.

1. The Magnitude of Wood Production

The effect of the tightening world supply on import availabilities suggests that a level of regional self-sufficiency or surplus could be an appropriate target. One strategy for achieving that target could then be for each country or state to plan for self-sufficiency at least and if possible, or desired, an exportable surplus.

Since that cumulative strategy is a more or less accurate description of the current approach to policy in most countries of the region, several questions might be asked of it. For instance, it would be worth knowing whether the individual strategies would, in total, meet the regional aim; and if so whether the production would exceed the capacity of potential export markets and hence suggest some inconsistency between the individual strategies. But in addition to those questions, it should certainly be asked whether there may not be a better way of reaching the production goal?

Taking it as a reasonable aim to meet Australasian consumption from Australasian resources, estimates are then needed of future consumption in Australasia relative to the capacity of the forest resources over the time period under consideration.

Forecasts of wood consumption have been recently prepared for several of the Australasian countries including the two major consumers — Australia and New Zealand. Without going into the merits of these forecasts, their sum could be taken as an approximation to an Australasian forecast with the omissions being balanced by the margins which exist, as Westoby (1962) points out, for greater economy and efficiency in use.

Unfortunately, it is not so easy to come up with so ready an estimate of the capacity of the resources. The extent by area of existing forest resources is known with an adequate, if rough degree of precision. But from the point of view of assessing capacity for wood production, area is of little value when, for instance, one hectare of exotic coniferous planta-

tion produces as much annually as five to twenty hectares of indigenous forest. Apart from the plantations and some of the major blocks of indigenous forest, data relating to present and potential productive capacity — the growing stock, its quality distribution, its actual and potential increments, the net rate of depletion either permanent or temporary — are fairly sketchy.

The magnitude of the expansion to be aimed at, however, is the key factor in establishing a strategy. Some attempt to specify it therefore has to be made. The attempt in this paper, summarised in Table 2, is largely a summing of current national information or estimates with personal estimates to fill the gaps. Consumption is expressed in roundwood equivalents, and excludes recycled wood residues from wood using industries, so that it approximates the net drain or offtake in industrial roundwood from the forest resource. It thus gives a basis for direct comparison with growing stock and increment, which are estimated in the light of current plans for utilisation, conversion, replacement and improvement of forest resources for wood production and transfers to primarily non-wood uses.

This time more credence can be placed in the figures, although they are still not particularly significant in themselves. What is important is that the present individual strategies add up to an Australasian strategy which in magni-

TABLE 2: AUSTRALASIAN WOOD SUPPLY — DEMAND BALANCE TO 2005 UNDER CURRENT NATIONAL STRATEGIES

	<i>Year</i>		
	1975	1985	2005
Consumption of primary wood fibre (million m ³ R.W.E.):			
Log	16.0	18.0	24.0
Pulpwood	9.0	11.0	17.5
Wood production resource area (million ha):			
Plantations	1.3	1.9	2.9
Indigenous forests	93.0	88.0	75.0
Average annual yield (million m ³):			
Log	16.5	19.0	27.5
Pulpwood	15.0	20.0	29.0
Wood supply-demand balance (million m ³):			
Log	+0.5	+1.0	+3.5
Pulpwood	+6.0	+9.0	+11.5

Sources: Forestry Development Council, New Zealand, 1972; Forwood Conference, Australia, 1974; Department of Forests, Papua New Guinea, 1973; Tuolumne Corporation, Calif., 1971.

tude is consistent with the production target suggested. What is more, national self-sufficiency goals for each country would produce an exportable surplus which is small relative to the deficits which will exist in the main deficit regions even by 1985 and infinitesimal to those developing by 2005 (see Table 1). Hence there need be little doubt about the capacity of export markets outside Australasia to absorb the surplus. No serious inconsistency therefore arises from each country of Australasia pursuing self-sufficiency or an export surplus as its strategic goal.

2. *The Location of Wood Production*

That the present individual strategies are, in total, consistent between themselves and with the outlook for forest products markets does not mean that the result amounts to an appropriate Australian strategy. Although self-sufficiency may be a justifiable goal for Australasia as a whole, it does not necessarily follow that national or state self-sufficiency is also justifiable. Despite the popularity of self-sufficiency as a goal in forestry there is no particular virtue in it, either for its own sake or out of necessity. The degree of self-sufficiency which is appropriate for a national goal depends on comparisons of more alternatives than those implied in simple and questionable assessments of future global wood balances.

In this respect it might be sensible, therefore, to emphasize the concept of comparative advantage. It offers a more comprehensive guide to national strategy than deductions from the evolving world demand resource imbalance. But the calculation of comparative advantages or disadvantages will need to be much more fundamental than the traditional comparisons of tradeable goods relative to direct inputs. What is needed is an assessment of social comparative advantage, taking into account social costs as well as social benefits, in the light of a diminishing social utility of narrowly defined economic growth.

In the traditional style, the practical problems of computing social comparative advantages are shelved in this paper. Nevertheless, some idea of the range of possibilities can be deduced. The effect on net social benefit of the addition of, say, 1000 hectares of exotic plantation in a given country would vary with:

- (1) The current level of economic development.
- (2) In *per capita* terms, the size of the population.
- (3) The size, range and durability of the economic resource base.

- (4) The development options open.
- (5) The extent to which replacement of indigenous forests was involved.

From the constraints or conditions developed earlier in this paper, it can be assumed that the relationship between each of those factors and the contribution additional plantations would make to economic development is inverse and probably not linear. The status of each Australasian country (or state) could be rated in respect of each of the above factors on a scale with, say, A representing very high, large, wide or extensive relative to the other Australasian countries and E very low. By weighting the ratings and the factors, the countries could then be ranked in order of the contribution to net social benefit that would be associated in each one with an additional unit of exotic plantation. The results of a simple approach to such an exercise are summarised in Table 3.

In principle, the rank assigned to a particular country depends on the rating given to each factor, the weights applied to each factor and rating, and the way that the weights are then combined. Although the ratings in Table 3 have some quantitative base, most of the assessment that leads to the ranking is unavoidably subjective. However, considerable deviations from the simple equal additive weighting which was used would be needed to make significant changes in the relative positions of the major countries in the group.

TABLE 3: RANKING OF AUSTRALASIAN COUNTRIES BY CONTRIBUTION TO NET SOCIAL BENEFIT OF ADDITIONAL EXOTIC FOREST PLANTATIONS

<i>Country</i>	<i>Econ. Dev. Level</i>	<i>Population</i>	<i>Resource Base Extent</i>	<i>Dev. Options Open</i>	<i>Indig. Forest Conversion Involved</i>	<i>Rank</i>
Australia	A	A	A	A	A	7
New Zealand	A	C	C	C	A	5
Papua						
New Guinea	E	C	C	D	D	4
Fiji	D	D	D	E	D	4
New Caledonia	B	E	C	C	E	6
New Hebrides	E	E	E	E	A	3
B.S.I.P.*	E	E	E	E	A	3
Western						
Samoa	E	E	E	E	B	2
Other Pacific						
Islands	E	E	E	E	D	1

*British Solomon Islands Protectorate.

It will be apparent that the ranking is not in terms of social comparative advantage. It is really in terms of relative social benefit-cost ratios associated with additional areas of plantation. Nevertheless, it may be good enough to make the point regarding the locational aspects of an Australasian strategy. And that point is that there are reasons for suspecting that national self-sufficiency is not an appropriate goal for each individual strategy in Australasia. Some redistribution of the programme for expanding production is therefore indicated.

The main contribution to increased production in the current strategy comes, as Table 2 shows, from an increase of around 1.6 million hectares in the area of plantation over the next thirty years. Redistribution from Australia and New Zealand to the developing countries, according to the rankings in Table 3, would raise the net social benefit in all countries and Australasia as a whole. An important question then is: How much of the plantation expansion could be so redistributed?

With the exception of New Caledonia, the potential for net social benefit from plantation development is greatest in the smaller countries of Australasia. However, it is hard to see in those countries capacity for much more than an additional quarter million hectares of plantation, over that already included in the estimates in Table 2. Only Papua New Guinea has the land-population ratio that would allow a major expansion of the plantation programme outside Australia and New Zealand. The redistribution problem, therefore, is to estimate how much additional plantation could be envisaged in Papua New Guinea over the next thirty years, providing a greater positive net social benefit than elsewhere. In the absence of the information to calculate an answer, it is suggested that one million hectares may not be far wide of the mark. Thus at least 0.6 million hectares cannot be redistributed to the developing countries of the region.

The next question therefore concerns the distribution of that 0.6 million hectares between Australia and New Zealand. According to the rankings in Table 3, additional plantations will produce a greater net social benefit in New Zealand than in Australia. However, afforestation of deteriorating land in Australia may produce a greater net benefit than plantations based on conversion of indigenous forest in New Zealand. Without going into the possibility, it may, at this stage, be estimated that 0.5 million hectares of bare land afforestation for timber production is feasible in Australia. That figure is therefore included in the Australian programme.

Thus an appropriate strategy for Australasian wood production, giving a somewhat greater area, but much the same total capacity as current individual strategies, but redistri-

TABLE 4: AN AUSTRALASIAN STRATEGY FOR WOOD PRODUCTION TO THE YEAR 2005

Country	1975 Area (million ha)		1985 Area (million ha)		2005 Area (million ha)	
	Plantations	Indigenous Forest	Plantations	Indigenous Forest	Plantations	Indigenous Forest
Australia	0.60	42.0	0.75	40.0	0.75	38.0
New Zealand	0.60	5.7	0.80	5.6	1.00	5.0
Papua New Guinea	0.02	40.4	0.10	38.0	1.00	28.0
Fiji	0.03	1.2	0.10	1.0	0.20	0.7
New Caledonia	—	0.2	—	0.2	—	0.2
New Hebrides	—	1.0	0.02	1.0	0.05	0.05
B.S.I.P.	0.02	2.5	0.10	2.5	0.15	1.00
Western Samoa	—	0.05	0.02	0.05	0.05	0.05
Other Pacific Islands	—	—	—	—	—	—
Australasia (rounded totals)	1.3	93.0	1.90	88.0	3.20	73.0

buted to give a considerably greater net social gain, would appear as summarised in Table 4.

One implication is immediately obvious — that is, that the wood deficits which would develop in certain countries (*e.g.*, Australia, New Caledonia) under this locational strategy could be met by imports from the surplus countries (*e.g.*, New Zealand, Papua New Guinea, Fiji). The Australasian net surpluses shown in Table 2 would not be affected by the required level of intra-Australasian trade to make Australasia self-sufficient.

The strategy outlined in Table 4 also covers the timing aspect of specification. Over the coming decade the bulk of the plantation expansion would still be located in Australia and New Zealand. Thereafter the emphasis would move to the developing countries. On the whole, the timing is probably appropriate in view of the transitional and gearing up problems associated with the scale and type of redistribution proposed.

3. Responsibility for Implementation of the Strategy

One important aspect of strategy specification has yet to be considered — the responsibility for implementation. On the face of it, there is no problem. It seems to be almost axiomatic that the major responsibility for implementing national strategies in forestry lies with governments. Even that part which is planned or considered for channelling through the private sector seems to depend for success, it is assumed, on governmental assistance. But why should it be so assumed? There seem to be a few contradictions in the logic behind the arguments but they will not be discussed in this paper.

What is more to the point is that industry is the link between wood production and wood use. As long as industry and markets are in the private sector, implementation of a national forest strategy is the responsibility of both governments and industry. For the strategy proposed, the joint responsibility for implementation is even more critical than normal. The strategy, to have the effects implied by it, depends first on redistribution of plantation expansion to the developing countries from the developed countries, followed by full-scale industrial processing of the raw materials in the developing countries.

An investment programme to bring those two requirements about would necessitate transfers of government funds for plantation development to developing countries — *i.e.*, linking the aid programme to national forest strategies, and encouragement and facilitation of industrial investment in conjunction with the forestry investment aid programme. At

first sight that seems to be contrary to one of the important constraints imposed — the constraint that the Australasian strategy will have to be worked out as a series of independently developed national strategies. But the breach is more apparent than real. The constraint referred to an Australasian strategy worked out deliberately by Australasian-wide governmental joint agreement. A national strategy to expand forest resources in another country through a linked aid-forestry-forest industry programme requires abandonment of the self-sufficiency fetish by one government and working out an aid agreement with another government.

One constructive step in the direction of simplifying and rationalising the national strategies could therefore be to place the major responsibility on forest industry to provide its own future wood resource. Conformation to the national strategy could be controlled by encouragement and assistance directed towards locations consistent with the strategy. That may be much simpler, cheaper and more flexible than direct implementation by governments, particularly in the two developed countries.

CONCLUSION

An Australasian strategy is feasible even if it has mainly to be achieved as the sum of the individual national strategies. In this respect, present strategies for increased wood production add up to a consistent strategy relative to world markets and involve no serious anomalies within Australasia. However, a better strategy could be devised in terms of the contribution that an expansion of wood production could make to net social welfare within each country and within Australasia as a whole. The strategy would still be based on an expansion of wood production, effected, of necessity, through a substantial increase in the area of high yield, fast growing plantations. But several deviations from the present cumulative strategy would be involved. They are:

- (1) A reduction of over one million hectares in the planned rate of expansion of wood production plantations in the more developed countries of Australasia.
- (2) Redistribution of that million or so hectares to the developing countries of the region, to the limit that they can physically and politically go.
- (3) Sequencing of plantation expansion so that afforestation of bare or deteriorating land precedes the conversion of indigenous forest.
- (4) Expansion of forest industry based on the location of additional production in the developing countries.

- (5) Placing the main responsibility for implementation, in the case of the developed countries, on the private sector.

Most of the deviations only place greater emphasis on programmes that are already elements in current strategies. But some drastic changes of attitude are implied in raising them from minor to major status. If that is too much to expect, it may be some consolation to know that present individual strategies are not too far off course. And if the frustrations of sticking to them become too intolerable, then it may be some consolation to know that there is a better strategy — better for all concerned, and easier on the political nerves.

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