

PLANTATION FORESTRY & THE ENVIRONMENT

Source: This section of the prospectus is a brief summary of our opinions on these topics. However they in turn partly rely on the following well researched and detailed source which readers are referred to:-

McLaren, J.P. 1996. Environmental Effects of Planted Forests in NZ. FRI Bulletin No. 198. NZ Forest Research Institute.

This book is available from Forest Research, 03 364-2949. We recommend it.

Topics touched on:

- Conservation of 'Natural' Forest Ecosystems
- Water Quality & Yield
- Erosion Control & Soil Improvement
- Biodiversity & Monocultures
- The Greenhouse Effect
- Socio-economic Effects
- Wilding tree spread
- Aesthetics

Conservation of 'Natural' Forest Ecosystems

This country has indigenous forest cover over 23% of its land area, almost all of which is no longer available for the extraction of timber, and 1.5m ha of exotic plantations, almost all of which is solely available for timber production.

It is arguable that New Zealand is unique in this regard. World-wide, it is still the case that more than 90% of wood harvested comes from indigenous, naturally occurring or regenerating forests.

Our plantations are producing wood that substitutes for this production, so they directly contribute to the conservation of indigenous ecosystems, both here and in other countries.

It is true that some plantations are planted where native scrub has been cleared, however most planting is now on ex-pasture or second or third rotation sites. Within many plantations, there are often significant areas of native vegetation left unplanted, particularly gullies and riparian setbacks along watercourses. For example, Triple Ridge will have several hectares of native reserves within and around its plantations. As grazing is largely removed following planting, the unplanted areas have more opportunity to regenerate.

Further enhancement of indigenous ecosystems occurs if forest management includes a high and on-going level of animal pest control. This is included in the Triple Ridge Forestry Plan.

Erosion Control & Soil Quality

If site preparation, track construction and harvesting are not well managed, temporarily, water quality and water courses can suffer. Following proper guidelines will greatly reduce if not eliminate any negative effects.

However for perhaps 25 to 45 years the quality of water draining from a plantation catchment should be high, and higher than previously if the plantation has replaced grazing.

Forests don't 'attract' rain, as the popular myth goes but undoubtedly on a continental scale, they increase rainfall by recycling the fixed amount of atmospheric moisture that reaches the land from the ocean. Water yield from a particular catchment will usually decline in comparison to pasture, but so usually will sediment runoff. This helps reduce flash-flooding as will forests themselves in small catchments for small storm events.

Water Quality & Yield

The clearance of natural forest cover has resulted in considerable soil erosion and deterioration in New Zealand as well as world-wide. There is indisputable evidence that reforestation is the answer to erosion and that the changes in soils following reforestation are generally beneficial or neutral.

Trees bind and dry soil with their roots, holding it in place and thereby reducing erosion from slips as well as sediment run-off.

There is a popular myth that trees, particularly pines 'suck the nutrients out' of soil. This is not so and probably is kept alive by the superficial observation that there is sometimes very little else growing under a pine forest. This is due to heavy shading and/or dryness, not poor soil. Indeed studies have shown that pines appear to increase some nutrients important for growth and bring them up from lower levels where they may otherwise be leaching out.

Biodiversity & Monocultures

'Biodiversity' is a word with positive connotations, just as 'monoculture' is seen as the opposite. Many people think the former means many species in one area and the latter, one species. Their definitions are more expansive than that but in relation to plantation forests, opponents will criticise pine as 'a monoculture lacking biodiversity'. The fact that pine forests are usually no less biodiverse and no more monocultures than indigenous beech forests is often overlooked as the real concern is the perceived loss of native species and habitats that plantations are, wrongly seen to represent.

Plantation forestry does not displace indigenous forest in New Zealand and indeed it helps remove pressure to harvest native forests both here and abroad.

Pine forests in mainland New Zealand support a greater number of birds than native forests and they host many other plant and animal species as well. Admittedly some of these species may be seen as 'undesirable', but pine forests cannot be said to lack biodiversity.

Monocultures, if what is meant is absence of species richness, are a common occurrence in nature. Indeed huge areas of the planet are characterised by plant and animal monocultures. The species diversity of tropical rain-forest is the exception not the rule.

Genetic diversity may be a more legitimate concern but although the trend is towards more cloned forest trees, the vast majority of planting to date has been, and still is, a lot more genetically diverse than may be apparent from the uniform looking plantations typical in New Zealand.

The Greenhouse Effect & the Carbon Cycle

There is no consensus about global warming being due to the greenhouse effect, but the balance of informed opinion is that the theory is correct or at least most probably so. The increase in atmospheric CO₂ is clear, and the main reason for it is clear - fossil fuel burning and deforestation. Many people believe it is a serious enough possibility to take action on now, rather than if or when it is proven beyond doubt.

High volume plantation forests like those of radiata pine in this country, on average contain 112 tonnes of carbon per hectare. Any new stand planted on pasture represents more carbon being removed from the atmosphere. The benefit comes from that removal being permanent, since today nearly all plantations harvested are replanted and that is very likely to be so in the future, thereby maintaining a carbon reservoir equal to the average forest carbon content.

Wood used for products or fuel is "carbon neutral" and so may well be used even more by industry in the future. This may come about due to the application of "carbon taxes" on carbon emitting activities. Forest owners may then reap an unexpected harvest if corresponding "carbon credits" apply.

At the very least there should be a trend towards using wood as a substitute for steel, aluminium and concrete as their manufacture releases a great deal more carbon than the production of wood equivalents does. Indeed wood industries could conceivably become completely carbon neutral by producing all the energy they need, and a surplus, from wood. Other industries could only be carbon neutral by constantly buying new carbon credits from forest owners.

Socio-economic Effects - Rural Decline?

A common concern with the increased reforestation of farmland is the loss of farming employment and income and thereby the decline of rural communities, both economically and culturally. In response one must ask whether this is caused by the ascendancy of forestry or a decline in the profitability of traditional stock farming. What evidence there is strongly suggests the latter.

Studies have shown forestry should generate as many or more jobs per hectare as any type of farming except perhaps dairying. But naturally, communities that are now based on farming do not envisage, or do not want to be forced into becoming forestry based communities, as to them that is a most unfamiliar culture. Perhaps that will not happen, and a balance between the two industries, which can be complimentary, will evolve. It does seem possible, as a great deal of afforestation in recent years has been by farms and syndicates planting farmland, not the large corporate foresters.

Of more interest to Warren Forestry and the farmers we have joint ventures with, are studies and actual examples of farms being made more profitable and sustainable by forestry. This occurs where farms have planted significant areas of their less agriculturally productive land. Such land may be producing little or even be a net cost to the farm, but may be good forestry land. These farms can then concentrate their resources on their best land, plus in the long run, receive as much or more income from trees as from farming.

Wilding Tree Spread

This is the seeding of exotic trees into the surrounding countryside and in New Zealand it invokes reactions ranging from abject alarm to indifference, even puzzlement at the suggestion that it might be viewed as a problem. The problem seems to be that they are not indigenous. But does that matter to Mother Nature? The effects that are seen as undesirable include loss of agricultural production (or the cost of removal), the suppression of indigenous plant communities and the modification of popular unforested landscapes. It is mainly the latter that attracts public concern since there is a perception that the formerly tree-less areas are 'natural' landscapes, whereas they are mostly shaped by human inputs such as fire, fertiliser and grazing.

The main species of concern are Lodgepole pine (*Pinus contorta*) and Douglas-fir (*Pseudotsuga menziesii*) since they have attributes that greatly assist their spread. Only the latter is planted nowadays and enough is known about its habits to either prevent or limit spread to an area close to the plantation.

The Triple Ridge Forestry Plan has a wilding control plan for its forests, notably the Douglas-fir plantation on Glens of Tekoa. Wilding control is not at all difficult or costly to implement if carried out from the beginning.

Aesthetics

The appearance of a landscape is important to most people, particularly in Western cultures. To some it is more important than productive and sustainable use of that land.

The attractiveness of a landscape is an entirely subjective matter, despite what some landscapers will claim. Probably a 'sudden' change in the appearance of a familiar landscape is alien to us all, but the suggestion by some that bare hills are more attractive than forested ones, or straight lines are ugly, is clearly a matter of taste which changes from person to person and time to time.

Aesthetics is an area where conflicting views are inevitable concerning plantation forestry. Intelligent foresters will take this into account and try to offend the sensibilities of as few people as is reasonably possible.

Unfortunately those who seek to control, limit or stop reforestation or harvesting because they do not like the look of it, do not pay the cost commensurate with their view.

However, fortunately it seems many New Zealanders see conifer forests as aesthetically pleasing. A random public survey in 1995 asked what adjectives the respondents would use to describe pine plantations. The most often used (out of 24) were profitable, renewable, peaceful, beautiful, ordered, natural, tidy and interesting.

Perhaps the fact 'profitable' was first suggests wealth, beauty and forested landscapes can be combined? This could be of growing importance to our economy.



Our planet needs trees. Plantations are good for the environment and good for your pocket.
Many see them as attractive additions to the landscape too. (photo: Kalimera)