

Indigenous Forestry on Private Land:

Present Trends and Future Potential

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by AD Griffiths, Forestry Consultant

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Executive Summary

The last two decades of the 20th century have seen major changes in the nature of the indigenous forestry industry in New Zealand. Government policy on the management of State forests for timber production, the passing of the Resource Management Act in 1991 and the Forests Amendment Act in 1993, have collectively changed the face of indigenous forest management. Not only has the emphasis of management moved strongly to forest sustainability (rather than simply yield sustainability) but the involvement of the Crown in indigenous timber production has progressively declined and timber production from Crown-owned land will cease by 2002. The indigenous timber industry, from 2002, will source all of its timber from private lands, most of that from forests managed on a sustainable basis in accordance with Part IIIA of the Forests Act 1949 (inserted by the Forests Amendment Act 1993 and subsequent amendments).

The beginning of the 21st century will mark the lowest level of indigenous timber production in New Zealand, with just 50 000 m³ of roundwood produced in 2000 (c.f. 1.6 million m³ in 1955, 1 million m³ in 1970 and 0.5 million m³ in 1980). However there are signs that there will be an upward trend in indigenous timber production from private land from 2002. While it is unlikely that production will increase in the medium term to the levels of the 1970's and 1980's, projections based on the average rate of approvals of Sustainable Forest Management Plans and Permits for the period 1996 to 2001 suggest indigenous roundwood production will be up to 186 000 m³ by the year 2010. Of this, up to 110 000 m³ will be sawlog quality timber. Though similar to the production levels of the 1990's, the rate of harvest will be low (2 m³ per ha per annum on average) and the mix of species will have changed dramatically, beech comprising at least 90 percent of sawn timber production and podocarps 10 percent or less, a complete reversal since 1997.

Attention has focused more recently on the “non-market” values of indigenous forests and at the same time there is a growing demand internationally for forest product labelling and certification of forests under management. Notwithstanding the dramatic changes brought about since the early 1990s, sustainable management of private indigenous forests has the potential to underpin a viable, long term industry. It is predicted that the contribution of the indigenous timber industry to the New Zealand economy will be \$269 million in 2010, involving the sustainable management of about 178 000 hectares of indigenous forest. A direct benefit and equally important, will be the ability afforded forest owners to reinvest in long term forest maintenance, with equal consideration of natural, amenity and timber values.

1. Introduction

New Zealand's indigenous forests cover an estimated 24 percent of its land surface, half that present prior to the European colonisation of New Zealand and one third that estimated to have been present before the arrival of Polynesians. Of the 6.4 million hectares (ha) of indigenous forest, approximately 1 million ha is privately owned **and** potentially available for management (A further 300 000 ha of private land, principally indigenous forest, have been either purchased or covenanted in recent years under the Nature Heritage Fund, Nga Whenua Rahui, QEII National Trust and Vote Conservation). Private indigenous forest land includes land held in fee simple, General Maori land and 1906 South Island Landless Natives Act (SILNA) land.

Indigenous timber contributed in a major way to the early development of New Zealand and up to the mid 1950s was the mainstay of the New Zealand timber industry. Exotic softwood timber progressively replaced indigenous timber in the building industry and as the most accessible indigenous forest resources diminished, public pressure mounted for the cessation of indigenous timber harvesting from Crown owned forests, especially in the North Island. By 1987, when the NZ Forest Service was disestablished, the logging of Crown owned indigenous forests was confined to forests in Westland and Southland.

By 1991, when the then government announced its intention to introduce legislation providing for the sustainable management of private indigenous forests managed for timber production, the annual production of indigenous roundwood had declined to an estimated 360 000 m³, of which half consisted of chip logs and wood chips for export. By the time the Forests Amendment Act (Part IIIA, Forests Act 1949) was passed in 1993, indigenous roundwood production had declined further, partly as a result of a government ban on log and chip exports, to 200 000 m³ per annum. Of this, one third consisted of the export of wood chips from forests on SILNA lands (SILNA forests being exempt from the provisions of Part IIIA of the Forests Act). Export of indigenous wood chips from SILNA land in Southland has been limited since 1996, principally due to a downturn in international demand.

This paper discusses trends in indigenous timber production and value from all sources, projects timber production from sustainable management of private indigenous forests, and its potential future value.

2. The Indigenous Forest Industry & Forestry Legislation

2.1 CURRENT INDIGENOUS TIMBER PRODUCTION

Over the last 10 years up to 50 percent of the annual production of indigenous roundwood has come from the Crown's indigenous production forests on the West Coast (Timberlands West Coast Ltd.). Timberlands indigenous timber production has progressively declined, with the cessation of unsustainable harvesting in North and South Westland in 1994 and in the Buller-Karamea in 2000.

Of the production of 110 000 m³ of indigenous roundwood in the year ended 31 March 1997, approximately 40 000 m³ came from Timberlands West Coast Ltd's operations on the West Coast and about 25 000 m³ from SILNA lands (Devoe and Olson, 2001). The remainder (about 45 000 m³) was harvested from other private forests under the provisions of Part IIIA of the Forests Act, administered by the Indigenous Forestry Unit (IFU) of the Ministry of Agriculture and Forestry.

For the year ended March 2001, indigenous roundwood production declined further to about 50 000 m³, of which 22 400 m³ came from Timberlands West Coast Ltd. Indigenous timber production from the Crown's indigenous production forests on the West Coast will cease as at 31 March 2002, in accordance with Government policy. Indigenous timber production will then be confined to privately owned forests.

2.2 PROVISIONS OF PART IIIA, FORESTS ACT 1949

Part IIIA of the Forests Act has three points of focus:

- it limits the export of timber from indigenous forests to personal effects, finished products and rimu and beech sawn timber from land managed under Sustainable Forest Management (SFM) Plans and Permits. Tree ferns may be exported from forest land where they are managed on a sustainable basis. Tree ferns and salvaged stumps and roots may also be exported from non-forested land;
- it limits the milling of indigenous timber to a number of categories, such as windthrown or dead timber, for a landowner's personal use (limited quantities), timber salvaged from non-forested land and timber from land managed under SFM Plans and Permits;
- it outlines provisions and procedures for the sustainable management of indigenous forests under approved SFM Plans and Permits.

Some forests are exempt the provisions of Part IIIA of the Forests Act; indigenous forest on SILNA land, West Coast indigenous production forest (managed by Timberlands West Coast Ltd.), land administered under the Conservation Act 1987 (The Conservation Act 1987 prohibits the sale of indigenous timber) and planted indigenous forests.

SFM Plans provide for long-term management of indigenous forests. They must be based on a forest inventory and provide for harvests of timber on a perpetual, sustainable basis while maintaining the forest's flora, fauna, soil and water quality, natural and amenity values and protecting the forest from pests, weeds and fire. Prescriptions contained in the Second Schedule to Part IIIA of the Forests Act recognise the general ecological characteristics of the major species groups and specify how they should be managed (kauri, podocarps and shade tolerant broadleaved hardwoods versus beech and light demanding hardwoods). SFM Plans must generally be registered against title to the land for a minimum of 50 years. They are appropriate to forest areas where sustainable harvests, either annual or periodic, can be conducted efficiently and profitably and where the landowner is committed to long-term management of the forest.

SFM Permits are limited to a 10 year term, provide for a maximum roundwood harvest of 250 m³ of kauri or podocarps or shade tolerant broadleaved hardwoods, and a maximum of 500 m³ of beech or light demanding hardwoods, irrespective of the area of forest, providing that the harvest does not exceed 10 percent of the timber standing on the landholding. SFM permits do not require the depth of inventory or other information necessary in a SFM Plan but are subject to the management prescriptions contained in the Second Schedule. SFM permits may be renewed after 10 years but only where the forest has replaced, through growth, the quantity of timber removed under the previous permit. The timber may be harvested at any time over the 10-year term, either as a single harvest or spread over a number of years. SFM Permits are a more practical option for small forest areas, or where the landowner does not wish to manage the forest for timber on a long-term basis.

For each year harvests are to be undertaken from land subject to registered SFM Plans and Permits, an Annual Logging Plan must be submitted to the IFU and approved prior to work commencing.

2.3 APPROVALS & APPLICATIONS FOR HARVESTING FROM PRIVATE INDIGENOUS FOREST

Information presented here is sourced from forestry statistics published by the Ministry of Agriculture and Forestry, the IFU SFM Plan and Permit register and sawmill returns to 30 June 2001. Projections of timber production exclude timber milled under the minor provisions of Part IIIA of the Forests Act (e.g. personal use, salvage etc). For the year ended 30 June 2001 the total quantity milled under these minor provisions was approximately 2 300 m³ of which 50 percent was salvaged timber.

Historically, over 80 percent of the indigenous sawn timber produced in New Zealand has been kauri and podocarps (principally rimu with lesser quantities of miro, matai, totara and kahikatea), the remaining 20 percent comprising hardwoods, principally beech and tawa. From April 2002 production of indigenous timber will be confined to private land subject to Part IIIA of the Forests Act and SILNA land that is exempt from the provisions of the Act. With the cessation of timber production from West Coast indigenous production forests there will be a substantial reduction in the supply of rimu, to about 10 000 m³ of roundwood annually.

SFM Plans, approved and in progress as at 30 June 2001, cover 35 300 ha and an **annual sustainable harvest** of about 70 100 m³ of indigenous roundwood. Of this, about 90 percent comprises beech and limited quantities of other hardwoods (e.g. tawa).

SFM Permits, approved and in progress as at 30 June 2001, cover approximately 50 300 ha and a **total harvest** of approximately 106 000 m³.

The total area covered by SFM Plans and Permits, approved and in progress is 85 600 ha. In the space of 15 years the ratio of softwood to beech and other hardwoods has completely reversed. Beech is set to become the principal indigenous timber produced in New Zealand.

Note: 'Indigenous roundwood removals' reported in forestry statistics are less than and are not comparable to rates of harvest approved under Part IIIA of the Forests Act. This is especially so in the case of beech, where a high proportion of the approved harvest will comprise non-merchantable timber (existing information suggests at least 40 percent) that will often not be removed from the forest unless outlets for industrial wood (e.g. woodchips) or fuel-wood are available to forest owners. Rimu in contrast is usually of good form and is sound. Roundwood removals are usually between 90 and 100 percent of approved rates of

harvest, based on historical records (Griffiths A, pers com). Roundwood figures referred in this paper are total roundwood, irrespective of quality, unless otherwise specified.

3. Current Trends in Timber Use & Forest Management under Part IIIA of the Forests Act 1949

3.1 LIKELY GROWTH TO 2010

In recent years the production of indigenous timber from land subject to approved SFM Plans and Permits has not been at the maximum allowable rate. The production of beech in particular is presently lower than the allowable rate of harvest. This is attributed to a limited consumer demand and less than optimal prices for beech and beech products. There are indications that private industry initiatives, coupled with the contraction in the supply of rimu and other podocarps, will see a significant increase in the harvesting and marketing of beech timber, especially red and silver beech.

The average annual rate of approval of draft SFM Plans (1 July 1993 to 30 June 2001) is 3 300 ha of indigenous forest producing up to 7 000 m³ roundwood per annum. The average annual rate of approval of SFM Permits for this period is 4 900 ha per annum providing for a total or “equivalent annual harvest” of 10 600 m³ of roundwood per annum.

The rate of approvals of both SFM Plans and Permits has been appreciably higher since July 1996, when the Transitional Sawmilling Provisions of Part IIIA of the Forests Act expired. These provisions allowed qualifying sawmills to mill pre-approved maximum quantities of timber, harvested on an unsustainable basis and were a preferred option to sustainable forest management, for some landowners.

The rate of approval of SFM Plans since July 1996 is 5 100 ha per annum with an approved annual rate of harvest of 10 500 m³ and for SFM Permits 7 400 ha per annum with a total or “equivalent annual harvest” of 15 200 m³.

Based on these more recent trends the projected area and allowable harvest of indigenous timber from private indigenous forest is:

Table 1. SFM Plans and Permits - Projection to 30 June 2010

	Area (ha)	Total Volume/annum (m ³)
SFM Plans	72 300	150 900
SFM Permits	105 700 ¹	15 200 ²
Total	178 000	166 100

¹ SFM Permits will begin to progressively expire prior to 30 June 2010. While dependent on the rate of permit approval/renewal, the total area under permits should begin to stabilise by 2010.

² Because the harvest under a SFM Permit is a total, one-off harvest, the estimated annual volume does not increase with area.

The total approved harvest in 2010 is thus likely to be up to 166 100 m³ per annum, an average rate of about 2m³ per ha per annum.

Assuming rates of harvest from SILNA land are maintained at existing levels (about 20 000 m³ per annum total roundwood), the total indigenous timber harvest by 2010 may be up to 186 000 m³ per annum, equivalent to pre-1993 levels. The likely rate of sawlog production will be lower, at about 110 000 m³ per annum. This is attributable to the increasing area of beech forest under management, with its relatively high proportion (40 percent) of industrial quality logs compared with less than 10 percent for podocarp species.

3.2 POTENTIAL FOR LONG TERM GROWTH

Of the available (and unfettered) 1 million ha of indigenous forest on private land, up to 50 percent may have potential for sustainable forest management. However confirmation of this requires detailed analysis of the private indigenous forest estate in terms of forest type, degree of past modification and physical constraints to management. Restrictions placed on the management of indigenous forests in some localities (rules in district and regional plans pursuant to the Resource Management Act 1991) may also limit timber production under sustainable forest management.

The three main species groups that have potential for management are beech, the podocarps (principally rimu) and broadleaved hardwoods (principally tawa). Beech will remain the most important species group in terms of production, by virtue of the resource available and superior growth rates compared with the podocarps and most other indigenous hardwood species. The podocarps and tawa are likely to be available in sufficient quantities to supply niche markets. Together, the podocarps and tawa are likely to supply about 20 000 m³ of the total indigenous sawlog production in 2010.

4. Price trends: 1993 – 2001

The indicative stumpage figures (return to the forest owner) below are based on average harvesting and transport costs of \$90 per cubic metre for ground based harvesting and \$140 per cubic metre for aerial harvesting. The aerial harvesting cost is inclusive of savings on in-forest roading associated with helicopter harvesting, of about \$10 per cubic metre. Stumpage values given below are averages based on information provided by forest owners and contractors and apply to sawlogs only.

Wholesale timber prices have been sourced from current timber merchant price lists for sales either exceeding 1 cubic metre or in pack lots.

4.1 RIMU

Between 1993 and 1996, when the Transitional Provisions of Part IIIA of the Forests Act were in force, rimu prices were constrained by mills with “allowable cuts” being in a position to dictate price to landowners who chose to undertake unsustainable harvests during the transitional period. At this time most of the rimu harvested was being sold to sawmills (or to forest contractors with access to mills with allowable cuts) for as little as \$50 per cubic metre on stump. This was equivalent to a “mill door” price of about \$150 per cubic metre. Since that time mill door log prices have increased to an average of about \$325 per cubic metre in 2000 and \$375 per cubic metre in 2001 (\$317/m³ in 1999; Levack and Collins, 2000; mill door sales up to \$500 per cubic metre have been reported in 2001.). This translates to a return to the forest owner (stumpage) of about \$285 per cubic metre for ground based harvesting and \$235 per cubic metre for aerial harvesting.

The limited supply of rimu is in demand by furniture manufacturers. With the imminent cessation of management of the Crown’s indigenous production forests on the West Coast there will inevitably be substitution for rimu where manufacturers are unable to source sufficient and continuous supplies (some manufacturers are already replacing rimu with NZ beech and imported timbers such as European beech and white oak). There is likely to be increased pressure on supply and price, but only to the extent that rimu prices remain competitive with other comparable domestic or imported timbers.

The current wholesale price for Heart Dressing A rimu timber is about \$2 300 per cubic metre (based on 100 x 40mm sawn timber dimension).

4.2 BEECH

In 1993 the bulk of the beech timber supplied to the NZ and Australian markets came from 1906 SILNA land (Southland silver beech). The approved harvest from privately owned beech forests subject to approved SFM Plans is approaching 50 000 cubic metres per annum (total roundwood). Many of these forests have not been in full production, partly because of the lack of profitable markets. Developments in the industry are positive and it is likely that a continuous supply of beech will be marketed from 2002 from a number of forests in both the North and South Islands.

Southland silver beech sawlog prices have risen from about \$75 per cubic metre at mill door in the mid 1990’s to between \$100 and \$250 per cubic metre depending on quality and individual sales (average \$175/m³). Anecdotal information on recent sales indicates that Southland silver beech is achieving a stumpage (all sawlog grades) of about \$60 per cubic metre (ground based harvesting). There appears to be a wider range of values in evidence for beech compared with rimu and tawa, probably attributable to variability in sawlog quality.

Current sales of red and silver beech sawlogs elsewhere in the South Island average \$215 per cubic metre. Overall the average at mill price for beech sawlogs is about \$200 per cubic metre, indicating a current stumpage value of about \$110 per cubic metre for ground based harvesting and \$60 per cubic metre for aerial harvesting.

The current wholesale price for Dressing A beech timber is about \$1 400 per cubic metre.

4.3 TAWA

Tawa was formerly used for a variety of purposes, including T & G flooring, utility products (handles), kitchen joinery, furniture and for interior timber detailing (skirtings, clashings etc). While recent production of tawa has been limited, some North Island manufacturers are investigating possible sources of tawa for production of high quality furniture.

Like rimu and beech, tawa log prices have improved since 1993, with mill door sawlog prices moving from \$75 to \$225 per cubic metre. This equates to a current stumpage of about \$135 per cubic metre for ground based harvesting and \$85 per cubic metre for aerial harvesting.

The current wholesale price for clean white tawa is about \$1 650 per cubic metre.

4.4 FUTURE PRICE TRENDS

Levack and Collins suggest that the correlation between supply and price of rimu from 1991 to 1999 is weak. However this statement does not appear to be consistent with some of the prices achieved in 2001. Given that the supply of rimu sawlogs is set to fall to 10 000 m³ or less in 2002, the likelihood is that there will be a significant increase in substitution for rimu by alternative species. This may moderate demand and further pressure for price increases. Red and silver beech are being sourced from available supplies and some manufacturers of high quality furniture are investigating opportunities for accessing beech and tawa to maintain production levels.

Prices for beech and rimu are unlikely to rise beyond the cost of presently available imported substitutes (e.g. European beech and salu salu respectively). Levack and Collins indicate there is price parity between salu salu and rimu. This, coupled with the imminent reduction in supply and the inevitability of substitution for rimu, is likely to “*temper any further increases in rimu price*”. There has however been a significant rise in rimu sawlog prices since 2000.

The price for the best grades of NZ beech is less than European beech; the latter is priced equivalent to rimu and has an international reputation for quality. There could be sufficient demand to push prices for NZ beech further in the short term but increasing availability of NZ beech and the price of substitutes may be moderating factors.

5. The Economic Viability of Sustainable Management of Private Indigenous Forests

There are many factors that influence the viability of an individual forest management proposal. Most important are:

- costs and returns associated with SFM Plans versus Permits (allowable harvest rates and costs of compliance);
- size of forest and forest resource (ability to achieve economies of scale);
- species under management (growth rates and value);
- location and physical factors (cost of production).

5.1 SUSTAINABLE FOREST MANAGEMENT PERMITS

SFM Permits currently require negligible expenditure on the part of the forest owner to make application and register an approved permit. It is estimated that the cost of establishing a SFM Permit is commonly less than \$1000 and may be as low as \$250; the principal cost being the registration of the permit against title to the land.

On occasion forest owners employ forestry consultants to prepare SFM Permit applications and while this action may incur additional cost, it is at the discretion of the owner. No formal inventory is required, and details requested as part of a permit application are minimal compared with a SFM Plan. Further, some conditions applicable to SFM Plans (e.g. forest protection) are not presently applicable to permits. SFM Permits are potentially very profitable. For example, a forest owner undertaking an aerial harvest of rimu under a SFM Permit may realise a stumpage revenue of about \$58 750 ($250 \text{ m}^3 \times \$235/\text{m}^3$) with negligible cost.

While the provisions for SFM Permits were inserted into Part IIIA of the Forests Act to enable a cost effective harvest to be undertaken from small forest areas/resources, it is noteworthy that 135 of the 320 SFM Permits issued to 30 June 2001 cover forest areas exceeding 100 ha and 16 of these cover forest areas exceeding 350 ha. Some landowners have indicated that they will progress to SFM Plans, indicating that costs of compliance with Part IIIA of the Forests Act may have influenced their initial decisions.

5.2 SFM PLANS

The drafting of a SFM Plan is reasonably complex, requires specialist knowledge and incurs a significant cost, both in undertaking the forest inventory required and drafting the plan. The impact of this cost on the profitability of forest management is directly influenced by both the size of the forest resource and the species present.

The preparation of a draft SFM Plan, even for a small forest area (e.g. 50-100 ha) is unlikely to cost less than about \$10 000, costs being split between forest inventory and collection of information, data analysis and drafting of the plan. For a forest of 100 ha this amounts to a cost of \$100 per ha. With increasing size the unit cost declines, a plan for a 500 ha forest costing about \$40 per ha. Where the forest carries a moderate resource of timber the cost of establishing the plan will normally be offset by revenue in the first few years of operation.

The following is an example of a registered SFM Plan in operation in podocarp-hardwood forest:

Forest Area:	220 ha
Podocarp resource:	23 980 m ³ (109 m ³ /ha)
Cost of SFM Plan;	\$15 000 ¹
Annual harvest:	100 m ³ /annum (sawlogs)
Stumpage value	\$23 500/annum (based on aerial harvesting)
Ongoing forest management	\$2 200/annum (\$10/ha)

¹ Includes Resource Management Act 1991 compliance.

A beech forest of equivalent area would have similar planning and management costs and with a sustainable rate of harvest (sawlogs) of 528 cubic metres per annum (say 4m³/ha/ann x 60 percent conversion to sawlogs) would return an annual stumpage value of about \$31 680 (assuming a stumpage based on aerial harvesting of \$60/m³)

Note: The Forests Act provides for a periodic harvest to be undertaken. This has benefits for the owner and the forest; it can reduce unit operating costs and reduces the frequency of harvesting operations (providing longer periods of forest stability without interference). The period is usually limited to a maximum of 10 years for podocarps and 5 years for beech, to ensure that forest structure and natural values are maintained.

There are additional compliance costs applicable to SFM Plans. These may include periodic monitoring of the forest, costs associated with restocking harvest gaps and pest control. Compliance costs (included as ‘ongoing forest management’ in the analysis above) will vary between forests but are unlikely to be less than about \$10 per ha per annum. This translates to \$22.00 and \$4.20 per cubic metre (sawlog equivalent) respectively, in the podocarp and beech examples above. Where rules in district or regional plans (Resource Management Act 1991) require a resource consent to undertake indigenous forest management, this may incur significant additional costs, from \$500 for a non-notified consent to \$10 000 in the case of publicly notified consent applications resulting in public hearings.

5.3 VALUATION OF FORESTS UNDER SUSTAINABLE MANAGEMENT

Historically, indigenous timber resources were valued in terms of their liquidation value at a point in time or over a specified liquidation period. Now that clear felling of indigenous forests is not an option it is appropriate to value them on the basis of the stream of revenues and costs under sustainable management, discounted to their present day value. Present Values are tabulated below for the two examples in 5.2:

Table 2 Present Value of Podocarp Forest under Sustainable Management

	Year	
Cost of Management Plan (includes RMA consent application)	0	15 000
Harvest (m ³ sawlogs)	annual	100
Management Cost (\$/m ³ - sawlog)	annual	22
Stumpage Value (\$/m ³ – sawlog; aerial harvesting)		235
Discount Rate (percent, lowest Treasury rate)		7
Term of Plan (years - set at minimum allowable under Forests Act)		50
Discounted Present Value (\$)		278,960

The Present Value is substantially less than the liquidation value of the standing timber (\$5.64 million). A substantial proportion of the difference (\$5.36 million) could be regarded as a

default value for the non-market benefits accruing to the forest, or more specifically the “public good” value attributed to the forest under sustainable management.

Table 3 Present Value of Beech Forest under Sustainable Management

	Year	
Cost of Management Plan (includes RMA consent application)	0	15 000
Harvest (m ³ sawlogs)	annual	528
Management Cost (\$/m ³ – sawlog)	annual	4.20
Stumpage Value (\$/m ³ – sawlog; aerial harvesting)		60
Discount Rate (percent, lowest Treasury rate)		7
Term of Plan (years – set at minimum allowable under Forests Act)		50
Discounted Present Value (\$)		391,600

This compares with a liquidation value of about \$2.77 million (assuming a stand volume of 350 m³/ha and sawlog conversion of 60 percent). The smaller gap between Present Value and Liquidation Value reflects the faster growth rate of beech forest and the higher annual harvest possible compared with podocarp forest, albeit at lower stumpage values.

Note: Where managed as an adjunct to a farming operation, business risk may be perceived in quite a different light. Indigenous forest owners in these circumstances would often ascribe substantially higher values to the future income from the forest than the discounted present values indicated above, primarily because of the relatively small capital investment required and the often limited potential of the land for alternative uses. In such circumstances business decisions will not necessarily be made on the basis of cashflow analysis at commercial discount rates.

6. Assistance to Owners

Since 1993 the former Ministry of Forestry (MOF), MAF, including the IFU, and private organisations such as NZ Farm Forestry Association has published a range of material to assist forest owners to:

- understand Part IIIA of the Forests Act;
- enable them to prepare applications for the harvesting of timber; and
- provide a basis for the preparation of draft SFM Plans and Permit applications for their forests.

The Ministry is limited in its capacity to provide substantial individual assistance. However on-site visits to discuss particular issues are often arranged with forest owners and are undertaken in conjunction with other forest inspections in the locality. Technical advice is also provided to owners on inventory methodology and analysis.

6.1 SFM PERMITS

The information requested as part of SFM Permit applications is not onerous. Where forest owners have a limited knowledge of their forest, timber resources etc, Ministry staff will assist them to determine additional detail required at the time forest inspection is undertaken as part of the approval process. Forest owners are also given advice on silvicultural management and directed to sources of additional information.

6.2 SFM PLANS

The process leading up to the submission of a draft SFM Plan sometimes involves regular contact with forest owners. Advice and assistance provided may include:

- contact details of known forestry consultants in the region;
- suggestions as to methods and intensity of forest inventory;
- advice on analysis and interpretation of data;
- sources of technical and ecological information; and
- options for forest management.

This may also involve a field visit with the forest owner.

7. SFM Standards & Guidelines

As part of the continuous development of information and procedures the IFU has developed a Standards and Guidelines document for SFM Plans and Permits. The primary impetus for this document has been a recognised need to combine the intent and detail of Part IIIA of the Forests Act with existing scientific knowledge pertaining to the ecology and management of indigenous forests and the forest technology available to the industry.

The Standards seek to:

- better define key management criteria, identify indicators of SFM and establish performance measures for assessing compliance of draft SFM Plans and SFM Permit applications;
- update procedures for assessing forest management compliance; and
- integrate essential ecological and technical information and advice into one document for ease of use by forest managers.

The Standards are expected to become operative in 2002.

Part IIIA of the Forests Act is not a substitute for private industry certification initiatives. However the existence in NZ of indigenous forestry legislation and its translation into ecologically based management standards provides a platform for indigenous forest owners seeking certification of their forest management.

8. Independent Influences e.g. Certification

“Certification” of sustainable forest management and product “labelling” (providing assurance as to the source of forest products by establishing their “chain of custody” from forest to retail outlet) have been the subject of debate around the world for some years. However timber consumers, merchants and processors globally are seeking greater assurances that timber products are from well managed, or sustainably managed forests. Non-government international organisations such as the Forestry Stewardship Council (FSC) have developed systems for the accreditation of individuals and organisations as assessors of the certification of “good” forest management and the certification of the “source” of individual manufactured timber products from certified forests. Certification of forest management and forest products is gaining international acceptance and its influence is spreading to New Zealand, both in the indigenous and plantation forestry sectors.

While there is little or no pressure from the NZ domestic market for certification and labelling of forest products generally, access to some offshore markets for timber products is becoming dependent on having FSC or other certification. For some exporters of both indigenous and plantation timbers, forest certification and product labelling have facilitated access to markets and on occasion improved the profitability of forest management. The international experience has been that price premiums may not result from certification and labelling; rather the prime motivation for undergoing what can be an expensive process is to obtain/protect market access.

The NZ plantation forest industry, through the NZ Forest Industries Council (NZFIC) is moving to establish a forest certification system compatible with FSC to ensure that access to offshore markets for plantation forest produce is protected, if not enhanced. Indigenous forestry interests are also represented in this process.

An independent Forest Certification Steering Committee, consisting of representatives of indigenous forest owners, practitioners and industry, was established to develop standards suitable for application in New Zealand indigenous forests. Through this initiative a start has been made on the development of best practice manuals for indigenous forest management, under funding from the Ministry of Agriculture and Forestry (Sustainable Farming Fund).

9. The Value of the Indigenous Forest Industry

Based on current and projected SFM Plan and Permit approvals the following estimates of wholesale timber value are attributable to the indigenous timber industry:

9.1 SAWN TIMBER VALUE AT CURRENT APPROVED HARVEST LEVELS

The following figures assume all approved harvests are uplifted and sold. Presently not all forests under approved SFM Plans are being managed and some are not being subjected to harvests up to the maximum allowable rate.

Table 4 Potential Indigenous Sawn Timber Value at 2001
(Includes Approved Harvests under SFM Plans and Permits and Estimates of Production from SILNA Land and Timberlands West Coast Ltd for 2001.)

Species	Total Roundwood (m ³)	Sawn Output (m ³)	Wholesale Sawn Timber Value (\$)
Rimu & other Podocarps	22 600 ²	12 200 (54 percent) ⁴	23 180 000
Beech and other Hardwoods	81 600 ³	24 500 (30 percent) ⁵	29 400 000
Total Value ¹			52 580 000

¹ Based on average kiln dried sawn timber prices of \$1 900/m³ for rimu and \$1 200/m³ for beech;

² Includes Timberlands programmed production of 12 600 m³ for 2001 and 10 000 m³ from private indigenous forests and SILNA land;

³ Includes 20 000 m³ total roundwood from SILNA land and 61 600 m³ from SFM Plans and Permits;

⁴ Assumes conversion of total podocarp roundwood to sawlogs of 90 percent and conversion of sawlogs to sawn timber of 60%;

⁵ Assumes conversion of total beech roundwood to sawlogs of 60 percent and conversion of sawlogs to sawn timber of 50 percent.

The actual production for 2001 will be less than indicated in Table 4 as not all approved plans and permits are currently being exercised.

9.2 SAWN TIMBER VALUE AT PROJECTED LEVELS OF HARVEST, 2010

The figures presented in Table 5 assume no further price movement in indigenous sawn timber. It is possible there will be some movement in the sawn timber pricing of some species (e.g. beech) with the further reduction in rimu availability but this will be limited by the price of available substitutes (e.g. European beech and tawa) and any perceived quality differences between them.

Table 5 Potential Indigenous Sawn Timber Value at 2010

Species	Total Roundwood (m ³)	Sawn Output (m ³)	Wholesale Value (\$)
Rimu & other Podocarps	10 000	5 400 (54 percent)	10 260 000
Beech and other Hardwoods	176 100 ²	52 800 (30 percent)	63 360 000
Total Value ¹			73 620 000

¹ Based on 2001 sawn timber prices, refer Table 4;

² Includes 156 100 m³ from SFM Plans and Permits and 20 000 m³ from SILNA land;

The total projected sawlog value (at mill) in 2010 is \$3.38 million for podocarps (10 000 m³ x 90 percent conversion x \$375/m³) and \$21.12 million for beech (176 100 m³ x 60 percent x \$200/m³). The economic multipliers associated with the conversion of sawlogs to kiln dried sawn timber are 3.0 for both podocarps and for beech. This is less than the figure of 6.5 derived by the NZ Institute of Forestry (Thorpe 1998) and the figure of 4 attributed by Thorpe to *Pinus radiata*, and reflects recent strengthening of sawlog prices.

9.3 CONTRIBUTION OF INDIGENOUS FORESTRY TO THE NZ ECONOMY

The estimated multiplier from sawlogs to sawn timber is less than that likely to be attributable to final processing of indigenous timber into finished products. Thorpe (1998) cites work by Timberlands West Coast Ltd. and the West Coast Regional Council and suggests that the appropriate economic multiplier from log revenue (mill door price) to final processing, is up to 11. Given that most indigenous timber is processed to finished product stage in NZ, in contrast to *Pinus radiata* (much of which is exported as logs or partially processed), a substantially higher multiplier than 4 is probably justified for the indigenous timber and manufacturing industry. The following is an estimate of the value of indigenous forestry to the NZ economy, applying the figure of 11 in Thorpe to the projected harvest levels (sawlog component) in Tables 4 and 5.

Table 6 Potential Value of Indigenous Forestry Industry

Year	Podocarps (\$million)	Beech (\$million)	Total (\$million)
2001	83.9	107.7	191.6
2010	37.1 ¹	232.4 ¹	269.5

¹ Based on 2001 log revenues (\$375/m³ for podocarps and \$200/m³ for beech).

Extrapolation of figures in Thorpe (1998), suggest a total economic value in the year ended 31 March 1997, of about \$200 million. The projection for 2001 (\$191.6 million) is only marginally lower, despite the fact that podocarp production has diminished markedly since 1997 (the recent movement in sawlog prices is a significant compensatory factor). As previously noted however, this figure is unlikely to be realised in 2001 because not all forest owners are presently exercising their SFM Plans and Permits.

The projection for 2010 (\$269.5 million) reflects the predicted increase in the area of beech forest being managed under SFM Plans and Permits. This projection may well be conservative. Further upward price movement for beech timber is possible if there is a high level of substitution of beech for rimu in the manufacturing industry (given the current price differential between them). The contribution of indigenous forestry to NZ's economy could by 2010, exceed by a substantial margin the \$200 million figure attributed in the 1997 March year.

10. Conclusion

Present predictions of future indigenous timber production are significantly less than Thorpe's 1998 prediction of up to 250 000 m³ (from private land) by 2003. However, the existing and potential future values of the indigenous forestry industry are significant and carry additional non-market benefits.

Active, sustainable management of private indigenous forests is one way of providing forest owners the means to re-invest in the forests' future. The control of pests and predators and the maintenance of forest productivity, soils, water quality, natural and amenity values are realistic prospects if the forests are financially self-sustaining.

Part IIIA of the Forests Act 1949 is not regarded as a perfect piece of legislation. For example, Devoe and Olson (2001) suggest it is too prescriptive and narrow in its portrayal of good indigenous forestry silviculture. Despite its shortcomings, it provides an economically viable option for achieving sustainability of private indigenous forests consistent with its purpose; *“to promote the sustainable forest management of indigenous forest land”*.

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