

Creating space for private sector financing in forestry – removing constraints to investment: A New Zealand case study

Mary Clarke¹

Introduction

New Zealand's forestry and wood-processing sectors are of considerable benefit to the country's economy, environment and society:

- Economy: Forestry is New Zealand's third latest export earner and is a major regional employer.
- Environment: New Zealand's forests provide for cleaner rivers, reduce erosion, sequester carbon and are a haven for wildlife.
- Society: Forests are an important recreational land use in New Zealand.

The future triple bottom line contribution of forestry and wood processing to New Zealand, and whether this will be sustained over the longer term, depends on how opportunities are embraced and challenges overcome.

The New Zealand Ministry of Agriculture and Forestry (MAF) has articulated its vision for the sectors' future. It has two points of focus: first that the sectors are innovative and profitable; second that they take full advantage of the increasing demand for wood and environmental services from sustainably managed forests (MAF 2008a).

If current trends extend into the future, New Zealand will fail to realize this vision: the rate of new planting and replanting has declined; the available wood resource is not being fully utilized (likewise the non-wood properties of the planted estate); and there has been no significant increase in productivity over the last decade.

To turn this vision into a future reality requires investment – investment in new planting, replanting, the wood and non-wood properties of the planted forests, new and existing wood-processing facilities and in people, processes and technologies. This paper is narrowly focused on creating space for investment in forest growing and wood processing.

In contrast to many countries of Asia and the Pacific, the majority of New Zealand's planted forests are owned by the private, not the public, sector. Any future investment in forest growing, management and processing will be determined by private interests. The role of the government in this future is to create the enabling environment that facilitates private initiative.

¹ Private Consultant.

However, there is limited understanding of what makes private sector investment in forestry and wood processing attractive. It is not immediately clear what constitutes an ‘enabling environment’. Nor is it clear what parameters investors assess to determine whether to put their money into forestry and/or wood processing.

This is one of a series of case studies that has been commissioned by the Bagong Pagasa Foundation. Here an attempt is made to answer such questions as they relate to New Zealand forestry and wood processing.

Specifically, the following sections of this paper provide an overview of patterns of resource ownership in the forest and wood-processing sectors, and the key players in the same; identify the broad constraints that are holding back private sector investments, including legislative and non-legislative constraints; and suggest viable means of removing or reducing these constraints.

The approach taken in this study is to explore the demand-side influences, supply-side considerations and legislative constraints that impact investment decisions and legislative constraints. On the demand side these include fluctuations in the exchange rate; the slump in housing demand in domestic and several key export markets; the need to address New Zealand’s stagnating and, in some cases, shrinking share of forest product export markets; and market access issues, notably non-tariff trade measures (NTTMs). On the supply side, relevant considerations include the availability and cost of selected inputs – labour, shipping and energy – alternative uses of the land and the investment dollar, the comparative advantage of New Zealand forestry and wood processing. Legislative constraints include the recently passed emissions trading legislation and the Resource Management Act, both of which are targeted for review by the recently-elected New Zealand Government.

Insights into these influences and considerations have been informed by a review of recent and relevant literature, and by the opinions of key commentators on the New Zealand forestry and wood-processing sectors.

Forestry and wood-processing overview

Before broaching the more analytical sections of this paper it is useful to have as a backdrop an appreciation of forestry and wood processing in New Zealand.

Planted forests cover 1.8 million hectares, or 7 percent of New Zealand. One species – *Radiata* pine – dominates, accounting for 1.6 million hectares, or 89 percent, of the total planted forest estate (MAF 2008c) (Figure 1).

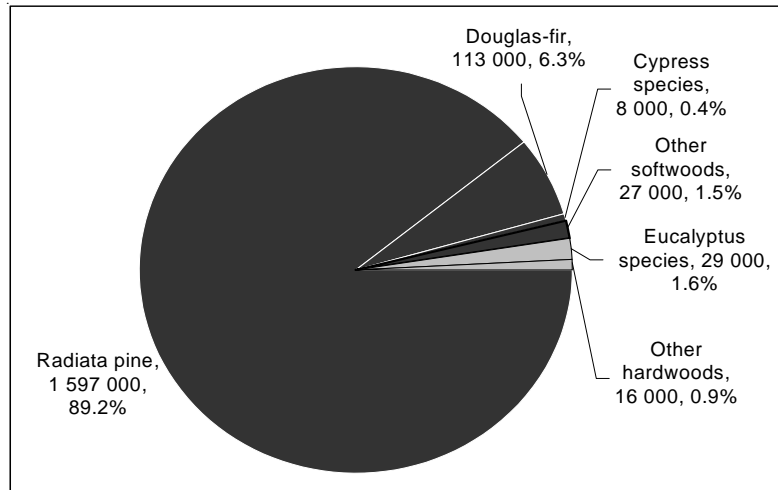


Figure 1. Planted forest species (hectares, share of total planted estate)

Source: MAF (2008c).

Seventy percent of the planted forests are in the North Island, leaving 30 percent in the South Island. Planted forests are most concentrated in the Central North Island (CNI) wood supply region, which accounts for close to one-third (30 percent) of the total estate (Figure 2).

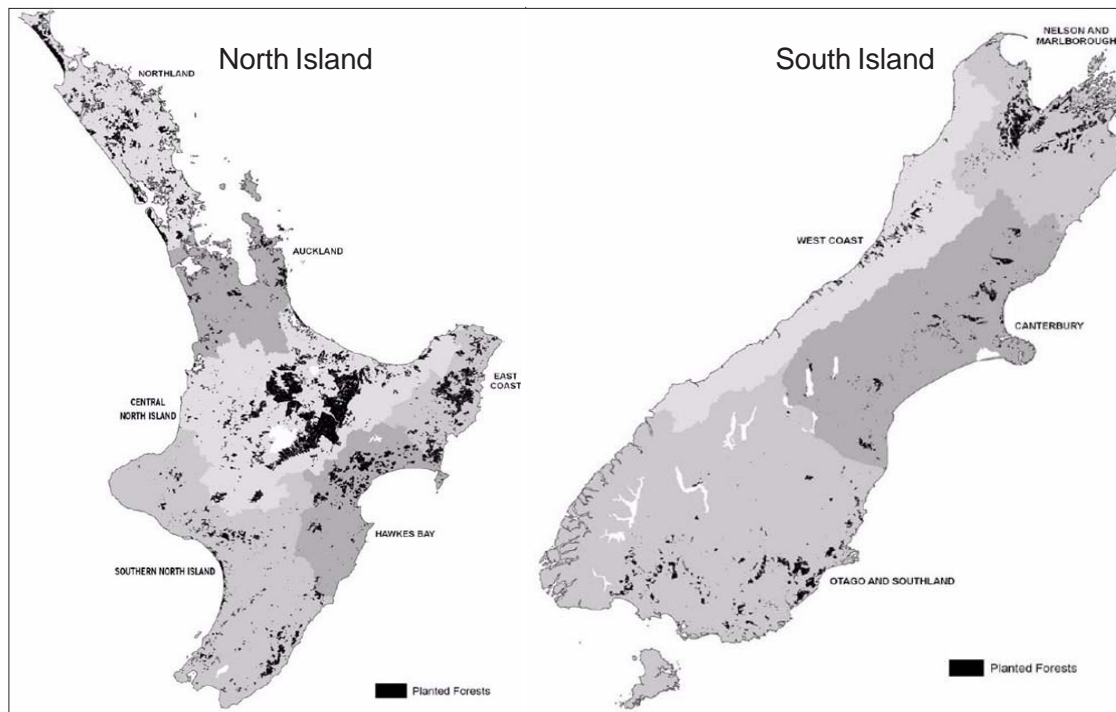


Figure 2. Distribution of planted forests

Source: MAF (2008c).

Figure 3 illustrates the age-class distribution of the planted forests. Very little of the forest area is planted in trees older than 32 years, reflecting the economic rotation age of *Radiata* pine, which is typically harvested at between 26 and 32 years. The areas of forest planted from the late 1970s to the mid-1980s are now approaching harvest age.

The prominent peak in the age-class distribution is for trees between nine and 15 years, reflecting the new planting boom that occurred between 1992 and 1998. Harvesting of these areas will begin from around 2020. The tailing off in new planting in more recent years is a cause for concern to some forestry commentators and is a theme picked up again in later sections of this paper.

How this translates into future supplies of wood is examined later where investment opportunity is discussed. There it is learned that wood availability is picked to peak in the early 2020s at more than 60 million m³. It then levels off to a sustained availability from the forests of larger owners of around 20 million m³, plus another 2 to 7 million m³ being contributed from the harvest of small forests.

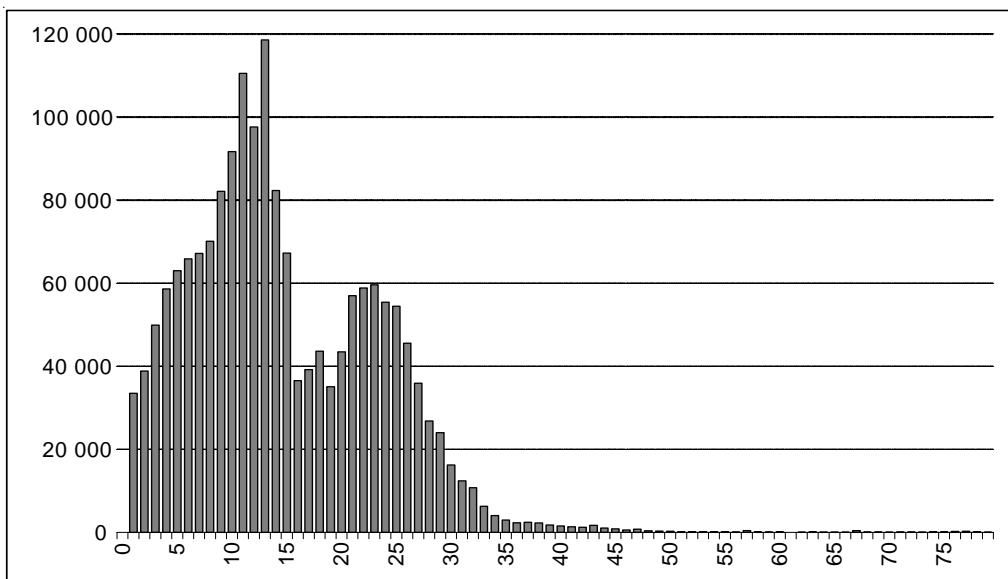


Figure 3. Age-class distribution (hectares)

Source: MAF (2008c).

The 19 million m³ of wood harvested in 2008 are less than harvest levels four and five years ago (Figure 4), as growers have decided to lengthen their rotations to provide for better quality and more desirable products in future (Horgan 2007).

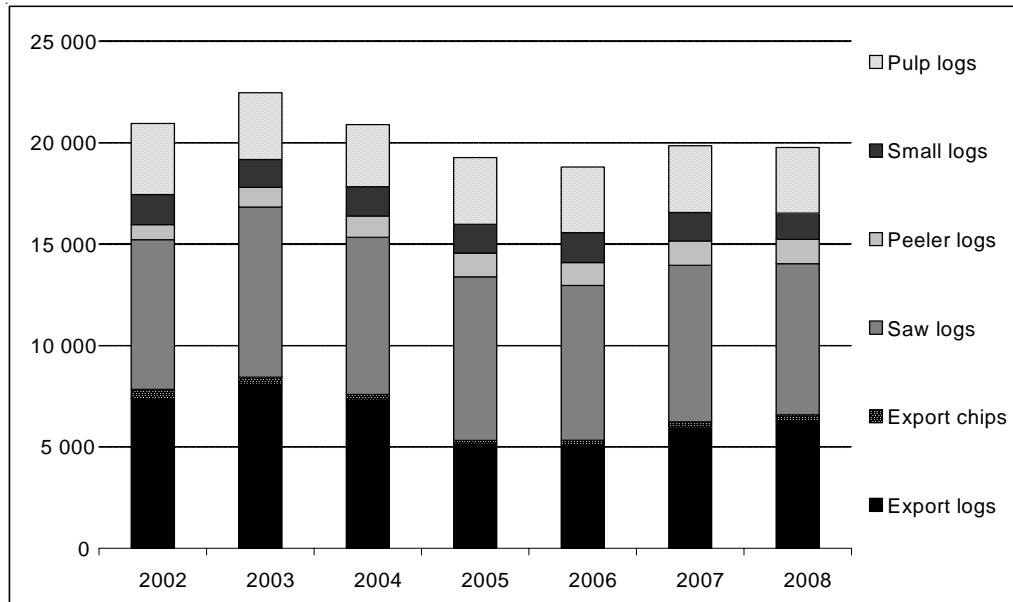
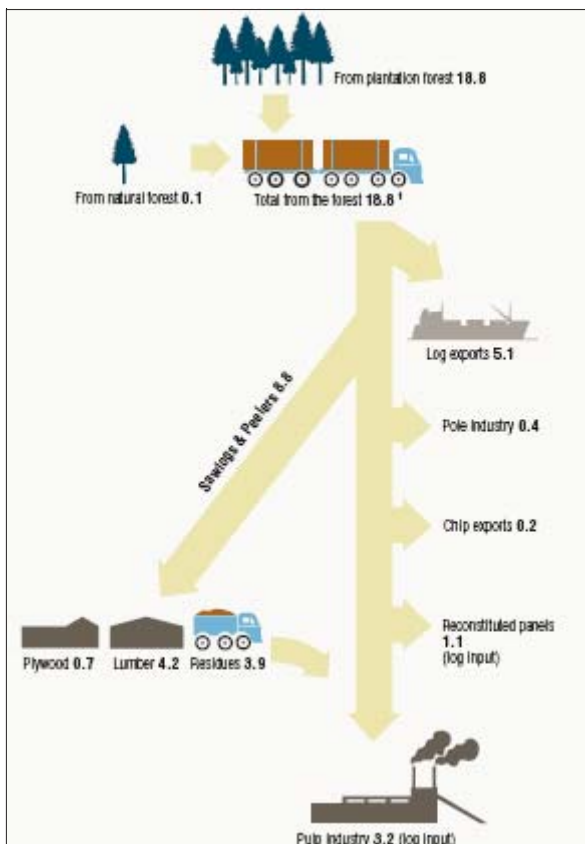


Figure 4. Roundwood removals (1 000 m³)

Source: MAF (2007a).



Of the wood harvested, approximately one-third was exported as logs, one-third went to sawmills and plywood mills, and the final third went to the pulp, paper and reconstituted panel industries (Figure 5).

The extent to which the logs are converted into forest products, consumed domestically as either a final or intermediary product, varies by product. For example, a greater proportion of chemical pulp and fibreboard is consumed offshore than onshore, whereas the reverse is true for plywood. Table 1 details the split for selected forest products.

Figure 5. Wood flow in the New Zealand forest industry, 2006

Source: NZFOA (2008a).

Table 1. Production and export of selected forest products, year ending March 2008, provisional figures

| | Production | Exports | Export share | Implied domestic consumption |
|-------------------------------------|------------|---------|--------------|------------------------------|
| Logs ('000 m ³) | 19 754 | 6 261 | 31.7% | 13 493 |
| Sawntimber ('000 m ³) | 4 433 | 1 773 | 40.0% | 2 660 |
| Pulp | | | | |
| - mechanical (air-dry tonnes) | 726 511 | 243 102 | 33.5% | 483 409 |
| - chemical (air-dry tonnes) | 802 397 | 623 129 | 77.7% | 179 268 |
| Paper | | | | |
| - newsprint (tonnes) | 285 626 | na | na | na |
| - other paper & paperboard (tonnes) | 589 079 | na | na | na |
| Panels | | | | |
| - Fibreboard (tonnes) | 767 288 | 578 962 | 75.5% | 188 326 |
| - Veneer | 700 948 | na | na | na |
| - Plywood (m ³) | 417 516 | 77 940 | 18.7% | 339 576 |
| - Particle board (m ³) | 242 291 | 118 281 | 48.8% | 124 010 |

Source: MAF (2008e).

How the future supply will be distributed is heavily dependent on private sector investment. If investment is minimal, an increasing share will be exported as logs.

Patterns of resource ownership in the forestry and wood-processing sectors

Patterns of forest ownership

Three distinct periods and patterns of forest ownership become apparent when one reflects on the history of planted forestry:

- State sector dominance.
- Rise of corporate and international players.
- Divestment of forest ownership to Timber Industry Management Organizations (TIMOs).

State sector dominance

Forestry before the late 1980s was characterized by direct involvement and dominance by the public sector. While in the Introduction, New Zealand is depicted as atypical with the private sector owning the majority of planted forests, this has not always been the case. From 1919 to April 1987, as in many other countries, the New Zealand Government's forestry operations were conducted by a single agency, the New Zealand Forest Service. Throughout much of this period the Forest Service was New Zealand's dominant planted forest owner. It also played research, policy and regulatory (e.g., biosecurity) roles. The Forest Service's proportionate ownership of planted forests peaked in the mid-1960s, when it owned almost 60 percent of the national estate (Figure 6).

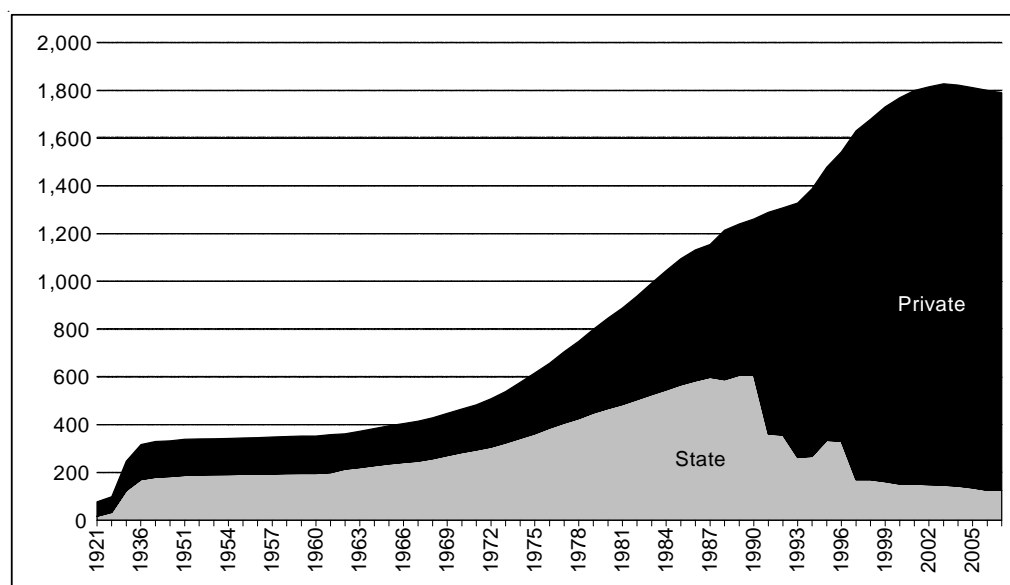


Figure 6. State vs private planted forest ownership (1 000 hectares, years ending 31 March)

Source: MAF (2008c).

In 1987, the government announced its intention to privatize public assets including its forests. Government businesses were to be sold with the primary aim of reducing public debt. Secondary reasons were to avoid the potential for future calls for cash from business interests; to minimize the government's risk exposure in the business sector of the economy; and to enable ministers to concentrate on matters of economic and social policy.

In 1989, prior to the rounds of forest sales, which commenced in the 1990s (see below), the government owned over half (52 percent) of the then 1.2 million hectare planted forest estate. Three New Zealand based corporates – Elders Resources, Fletcher Challenge Ltd (FCL) and Carter Holt Harvey (CHH) – together accounted for 30 percent. Small private forest owners represented a mere 18 percent. Figure 7 illustrates the ownership shares.

Rise of corporate and international players

The sale of the government's forestry assets progressed in a number of stages throughout the 1990s:

- In 1990, 73 000 hectares were sold through a sealed tender process to Asian interest Ernslaw One, and existing incumbent Fletcher Forests. An additional 174 000 hectares were sold later in the same year to Asian interests Juken Nissho and Wenita Forestry, and existing incumbent CHH, following negotiations which proceeded the tender process.
- Two years later, in 1992, a further 97 000 hectares of planted forests scattered throughout the country were sold to an American company, ITT Rayonier. A criterion

under which bids were assessed was the likelihood of the bidder undertaking additional downstream investment.

- The largest concentration of planted forests in the country, 188 000 hectares located in the Bay of Plenty in the North Island, plus processing plants in various locations, a nursery and a seed orchard were sold to a Central North Island Forest Partnership (CNIF), between Fletcher Challenge Forests and CITIC, a Chinese government-owned company.

(For further details on the privatization of the government's forestry assets see Brown and Valentine [1994], Clarke [1999] and Brown and Ortiz [2001].)

As a consequence of these sales and private sector transactions, by the end of the 1990s the pattern of ownership of New Zealand's planted forests was in stark contrast to what it was at the close of the previous decade. The government's stake of the now 1.5 million hectares of planted forests had shrunk to a mere 7 percent.

These comprised forests managed under Crown leases, forests in the West Coast that were subject to an environmental/commercial accord and a handful of other forests that had not been sold through the sales rounds.

In addition to taking a less direct role in forestry, the government altered its institutional arrangements, impacting its indirect influence on forestry and wood processing. Its research functions were assumed by a Crown Research Institute, enabling them to be more closely linked to sector needs. The Department of Conservation took over management of New Zealand's native forests. And the Ministry of Forestry (and latterly MAF) became responsible for the provision of policy advice and regulatory services.

As government ownership of forests decreased, private sector ownership increased. Two of the major New Zealand forest product companies – FCL and CHH – had expanded their stake in the sector, and between them accounted for more than 35 percent of the planted forests. Overseas players, from Asian countries and the United States, had entered the market. And the share of planted forests owned by smaller private sector players had increased to 27 percent, up from 18 percent in 1989.

Divestment of forestry assets to Timber Investment Management Organizations (TIMOs)

Since the early 2000s forest product companies, notably ITT Rayonier, CHH, Fletcher Forests (now Tenon) and Weyerhaeuser, have divested their interests in forest operations or disaggregated their business units to separate forest operations from processing businesses. A number of factors are cited as having motivated this divestment including (FIDA, personal communication, 2006):

- Poor shareholder returns, in part due to the forests being undervalued.
- Reducing company debt arising from past acquisitions.
- In the case of the United States, changing tax entity structures to improve tax efficiency.
- More competitive log markets due to the expansion of wood availability and more diversified forest ownership.

- A change in the operational philosophy that in order to secure wood supply for processing it is necessary to own the forests (picked up again in the discussion below where the link between forest growing and wood-processing investment is discussed.)

The forestry assets of forest product companies have been acquired by international investors and institutional funds – TIMOs. TIMOs have emerged as major players in the ownership and distribution of forestry assets. By 2008, TIMOs, including Matariki Forestry Group (Matariki), Hancock Natural Resource Group (Hancock), GMO Renewable Resources (GMO) and Global Forest Partners (Global), owned around 40 percent of New Zealand’s 1.8 million hectares of plantation forests.

New Zealand’s trend towards TIMOs dates back to 2003, when the receiver to CNIFP sold the forests and related forestry assets to the Kaingaroa Timberlands Partnership. The partnership’s forestry assets are managed by GMO, a specialist forestry investment subsidiary of Boston-based Grantham Mayo Van Otterloo and Co., LLC. It manages a total New Zealand portfolio of 240 000 hectares of forests in the Bay of Plenty, Wairarapa, Hawkes Bay and the East Coast.

TIMOs Hancock and Matariki entered the New Zealand forestry scene a couple of years later. Matariki is owned by a consortium of international interests – Rayonier, AMP Capital and Deutsche Bank’s REEF Infrastructure. In 2005, Matariki purchased 94 300 hectares of forest from CHH. Matariki also purchased Rayonier’s existing forestry assets, being approximately 48 000 hectares of planted forest and 30 000 hectares of freehold land. These transactions saw the consortium become the third largest planted forest owner, by area, in New Zealand.

Hancock became the largest forest owner when, in 2006, it purchased forests from CHH. This acquisition was in addition to smaller purchases of planted forests made a year earlier. Hancock is a United States-based TIMO. It develops and manages globally diversified forestry portfolios for public and corporate pension funds, high net worth individuals and foundations and endowments.

In 2007, Global acquired Weyerhaeuser’s interest in its Nelson forestry assets. Global is an investment advisor specializing in the structuring and management of forestry investment. Headquartered in New Hampshire, it manages timber funds and separate accounts on behalf of institutional clients and qualified investors.

This trend towards TIMO ownership mimics the changing face of forestry in other countries, notably the United States. Drivers underpinning this trend include (FIDA, personal communication; Neilson 2008):

- The historically strong risk-adjusted returns of forestry investments.
- Investment diversification.
- A low correlation with other asset classes.
- Inflation protection.

A further trend evident throughout this period is the continued growth in the share of the planted forest estate by small-scale private sector interests, namely farm foresters, Maori incorporations and investment groups.

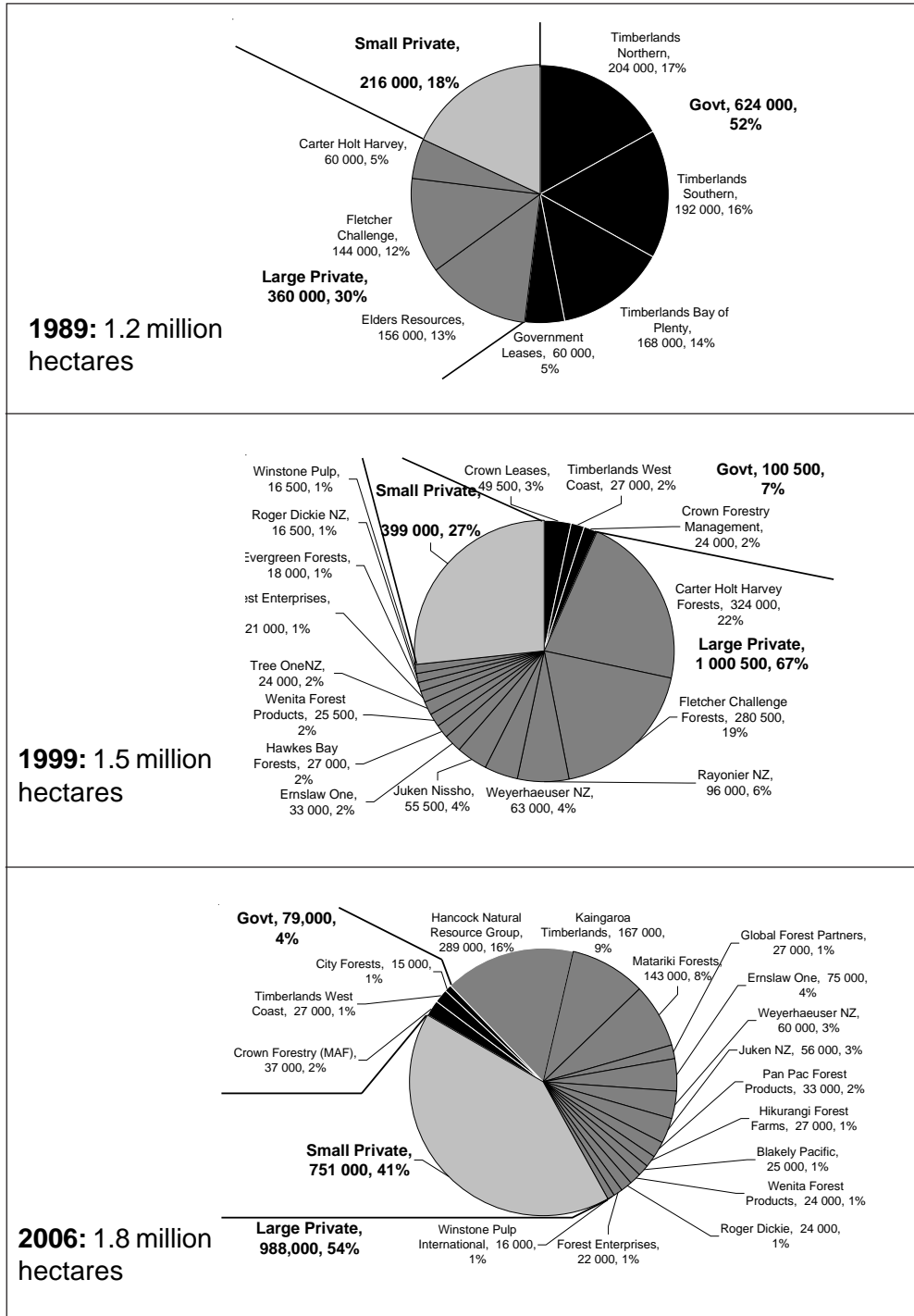


Figure 7. Forest ownership

Sources: Clarke (1999); NZFOA (2008a).

Figure 8 suggests the significance of these forest growers. In each wood supply region, without exception, the numbers of small-scale forest growers (who own less than 100 hectares each) outnumber the larger forest growers. This is particularly evident in the Nelson/Marlborough and Southern North Island (SNI) regions.

Despite their individually smallholdings, collectively the planted forest area owned by these small-scale growers ranks second only to the owners of large areas of planted forests (over 1 000 hectares). Their behaviours have a significant impact on new planting trends (which is discussed next) and, consequently, forecasts of future wood supply (which is discussed later where investment opportunity is explored).

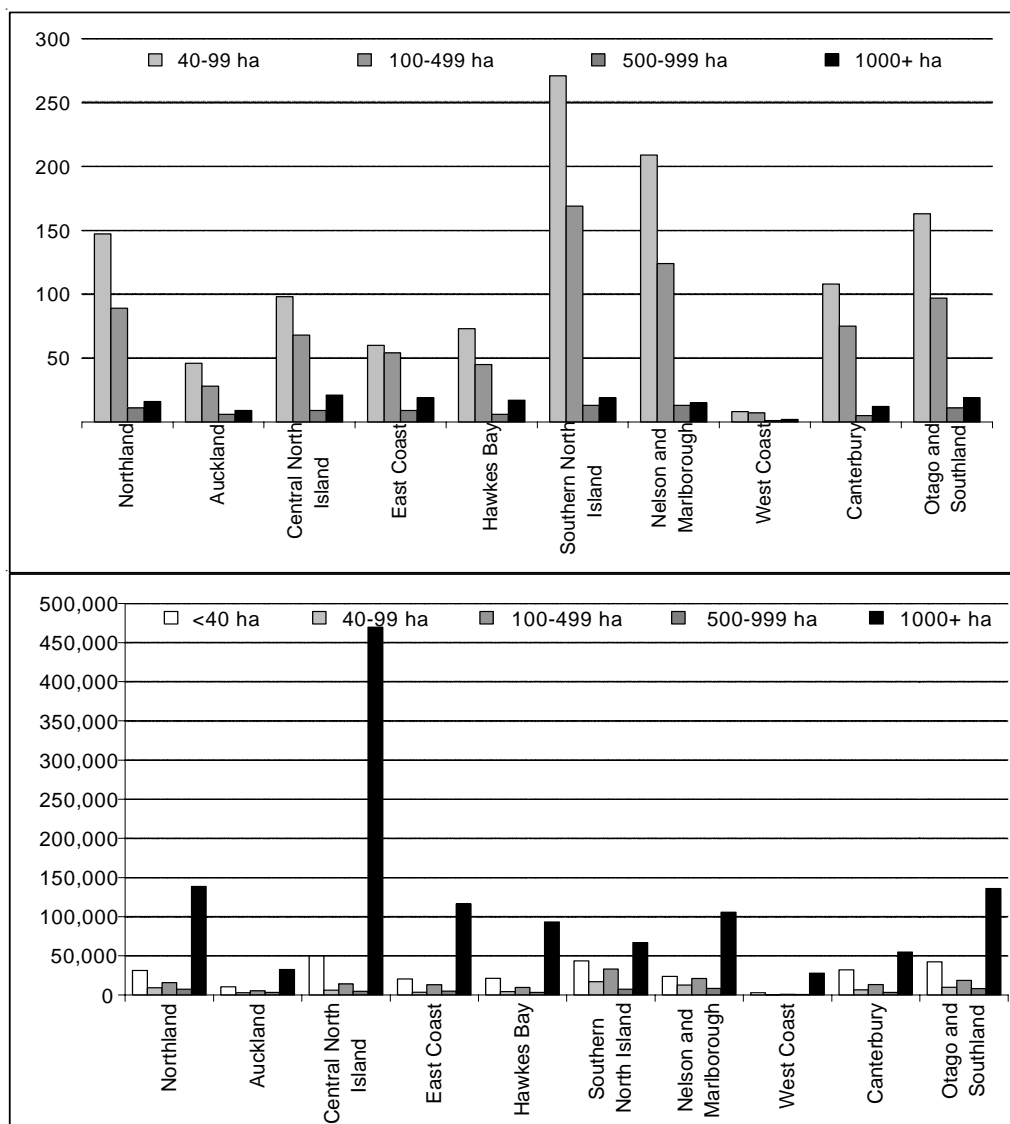


Figure 8. Location, size and number of forest owners

Source: MAF (2008c).

Plantings

The discussion here moves on from the ownership of the existing planted forests changing hands over time, to the efforts made by owners to maintain and grow the forested areas. On both fronts – the rate of replanting and new planting – the story is one of decline.

Over the 2006 calendar year an estimated 37 000 hectares of forests were planted. This constituted 2 600 hectares of new planting and 34 400 hectares of replanting. Approximately 35 600 hectares of previously harvested forest remained unplanted.

From 1991 to 2004, there was an increasing replanting rate (Figure 9). This increase was in line with increasing volumes of wood being harvested over this period. Since 2004, the rate of replanting has declined.

The average new planting rate over the last three decades has been 40 000 hectares per year. Since the mid-1990s, the annual rate of new plantings of commercial forestry has been trending downward. In the period 1992 to 1998, new planting rates hit record highs – averaging 69 000 hectares per year. Since 1998, new planting has declined. At 2 000 hectares in the calendar year 2007, new planting was at its lowest level since 1950.

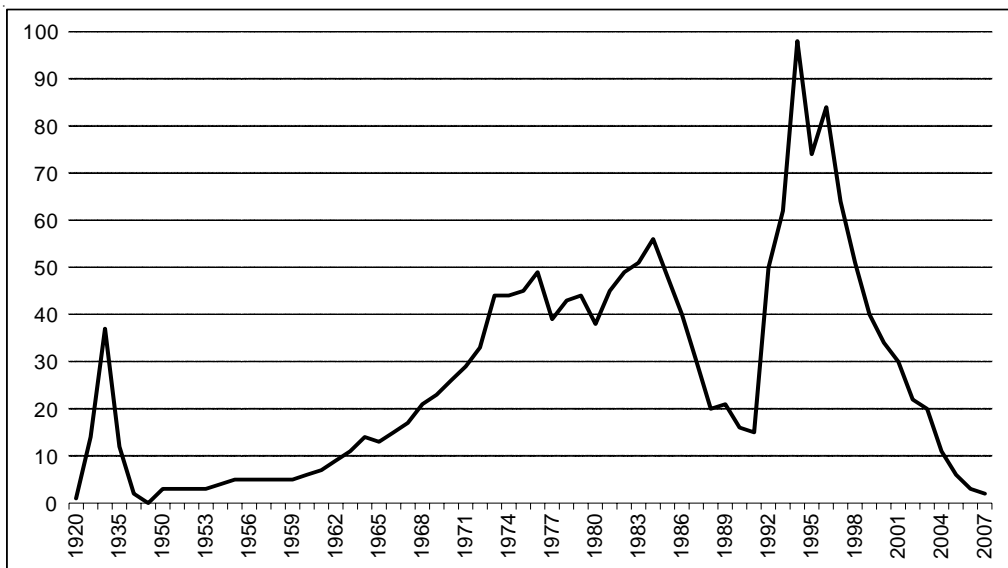


Figure 9. History of new planting (1 000 hectares, years ending 31 March)

Source: MAF (2008c).

Industry representatives (see, for example, NZFOA 2008b), in commenting on these trends, have suggested that they should be a wake-up call to policy-makers.

They posit a number of reasons for the trends, including:

- The improved returns to other land uses, notably sheep and dairy.
- A concern that by replanting trees investors may lock themselves and their land into trees for future time periods.
- The reduction in the actual harvest (in the order of 10 percent), as growers decided to lengthen their rotations to provide for a better quality and more desirable product in future (refer to the earlier discussion where the sector is overviewed).

These and other investment determinants are explored in latter parts of this paper. To address at least the first two determinants cogent government strategies have been called for. The suggestion is that climate change policies and regional and district plans have discriminated against forestry relative to other land uses (NZFOA 2008b).

The economic, environmental and social importance of forestry is stressed as justification for the government taking corrective action (see Introduction).

Link between forest ownership and wood-processing investment

When the government sold its forestry assets in the late 1990s, it was argued that rationalization of state forestry assets would result in a more efficient, internationally competitive sector. Its forests were dispersed throughout the country and had been established to meet objectives other than the purely commercial aim of profit maximization. A particular concern was the need to provide security of supply to processors in order to attract new investment into value-adding forestry industries.

The sale of forests to enable processors to integrate supplier functions into their operations was seen as a long-term optimal mechanism to achieve this end.

The forest ownership changes of recent times gives cause to question the assumption that it is necessary to secure wood to supply processing operations by owning the forests. The large forest product companies have divested their interests in forest operations or disaggregated their business units to separate forest operations from processing businesses. Their forestry assets have been acquired by TIMOs, who now dominate the forest-growing sector (see above discussion). This new dynamic, however, is not without its implications for the supply of wood to the wood-processing sector.

The institutional investment management strategies of TIMOs have implications for the management and supply of wood from their forests. These investors seek global diversification in their forest ownership as a way of reducing the impact of regional changes in supply and demand, by enabling the opportunity to sell when prices are high in one region and delay harvest in regions where prices are low. This is likely to increase the price responsiveness of forest owners to demand shifts, increasing the volatility of wood prices.

The overseas experience is that the shorter investment period (ten to 15 years) of TIMOs and the focus on returns over the lifetime of the investment have led to more rapid turnover in forest ownership in locations where TIMOs have become prominent (for example, in the South of the United States). This has a potentially negative impact on the stability of forest inventory and supply. The focus on returns has also led to changes in silvicultural intensity

and productivity, with less investment in treatments that have long-term benefits, and less expansion of plantation forest area (see above discussion on new planting). The response of forest product companies to changes in the South of the United States and Scandinavian forest ownership has been to increase the use of long-term contracting and long-term cooperative agreements as alternatives to vertical integration.

While the presence of similar arrangements is important for the viability of sawmillers, the same does not hold true for pulp and paper producers. These producers are increasingly tapping into alternative sources of fibre, including the residues from sawntimber and other solid wood production processes, recycled fibre and fibre sources from overseas producers.

The other trend in forest ownership evident since the 1990s – the increasing numbers of small-scale forest growers – brings with it its own set of challenges for processors seeking to secure or grow their supplies of wood. Even when taking the above considerations into account, the future wood supply forecast from these large-scale owners' forests has greater certainty than that forecast from the estates of small-scale owners. Between 2008 and around 2018, the forests owned by these owners are forecast to provide between 2 and 7 million m³ per year – a 5 million m³ range of possibilities (MAF unpublished). Leading up to 2020, significantly more volume will become available from the small-scale forest estate due to the large areas of forests established by these owners during the 1990s. Market conditions and logistical constraints (such as the availability of logging crews and transport capacity) will limit how quickly the additional wood availability from small-scale owners' forests can be harvested in the lead up to 2020 and beyond.

The operation of new and existing wood-processing ventures will increasingly require suitable log supply agreements to be negotiated with the owners of these small-scale forests.

Unless these owners are willing to enter into some form of resource aggregation arrangement, potential investors in wood processing may regard the prospect of securing a large and ongoing supply from such a diverse ownership as an unsurmountable constraint (MAF 2008a).

Investments in wood-processing

The wood-processing sector processes two-thirds of the annual wood harvest. The distribution of ownership in the wood-processing sector is significant to the extent that it enables the identification of potential constraints arising from wood supply issues, as well as providing an indication of potential sources and types of future investment. This section provides a brief analysis of the structure and investment history in each industry segment of the wood-processing sector.

The wood-processing industry in New Zealand comprises around 350 sawmills, eight pulp and paper mills, and 15 mills producing panel products. Figure 10 illustrates the distribution of wood processing by wood-supply region.

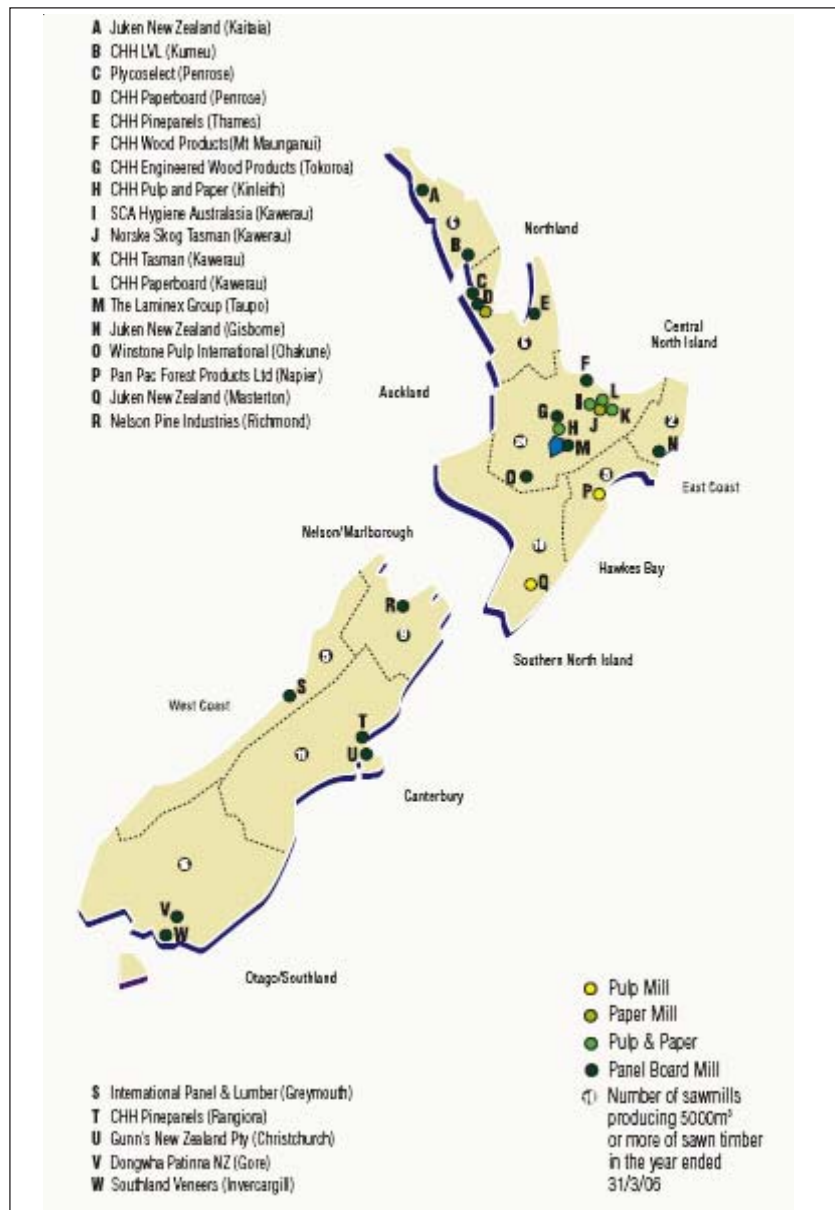


Figure 10. Location of wood-processing plants by wood-supply region

Source: NZFOA (2008a).

Sawntimber

Sawntimber production is pivotal to the future of both forestry and wood processing in New Zealand. In addition to utilizing close to 9 million m³ of roundwood each year, it supplies almost 4 million m³ of residues to the pulp and paper and panel sectors.

There are around 350 sawmills operating in New Zealand, ranging from facilities producing annually more than 250 000 m³ each year, to small family mills producing less than 1 000 m³.

Table 2 identifies mills in each wood-supply region producing more than 25 000 m³ of sawntimber each year.

Table 2. Mills producing more than 25 000 m³ of sawntimber each year

| North Island | | South Island | |
|---------------------------|--|---------------------------|---|
| Northland | CHH (formerly TDC Sawmills) Rosvall Sawmill Ltd | Nelson/Marlborough | CHH Ltd Flight Timbers Ltd South Pine (Nelson) Ltd Weyerhaeuser NZ Ltd Waimea Sawmillers Ltd |
| | 2 | | 5 |
| Auckland | CHH Kopu (now closed) Southern Cross Forest Products Ahead Lumber Andersen and O'Leary | West Coast | Westco Lagan Ltd |
| | 4 | | 1 |
| CNI | CHH Woodproducts Red Stag Tachikawa Forest Products CHH Timber Tenon Winstone Pulp International Rotorua Sawmill Ltd | Canterbury | SRS New Zealand Hunter Hills Lumber McAlpines Sawmilling Ltd McVicar Timber Group Ltd |
| | | | 4 |
| | Claymark Sawmill Pukepine Sawmill (1998) Ltd McAlpines (Rotorua) Ltd Cross Forest Products Ltd Mamaku Sawmilling Ltd | Otago / Southland | Craigpine Timber Company Ltd Blue Mountain Lumber Ltd Bright Wood New Zealand Ltd Gorton Timber Company Ltd Millstream Lumber (Southern Niagara Sawmilling Company Ltd Rosebank Sawmill |
| | | | 7 |
| | RH Tregoweth Ltd Tongariro Timber Company Waititi Sawmills Ltd Kiwi Lumber Ltd Seaqual Lumber Ltd | Total South Island | 17 |
| | 16 | | |
| East Coast | Prime Sawmills Ltd | | |
| | 1 | | |
| Hawkes Bay | Pan Pac Forest Products Ltd | | |
| | 1 | | |
| SNI | Eurocell Juken New Zealand Kiwi Lumber Taranaki Sawmills | | |
| | 4 | | |
| Total North Island | 28 | | |

Source: MAF (2006 , 2007c-e ; 2008f-h).

The general trend in sawmilling has been toward more consolidation with fewer and larger mills, and with the bulk of investment being in Brownfield² expansions and upgrades. The trend, however, appears to be turning with the greater proportion of investment intentions announced in more recent years being Greenfield.³ Figure 11 is derived from a database maintained by the MAF. Given that it is built up from announced investment intentions only, it should be interpreted with caution, as it fails to portray the full story.

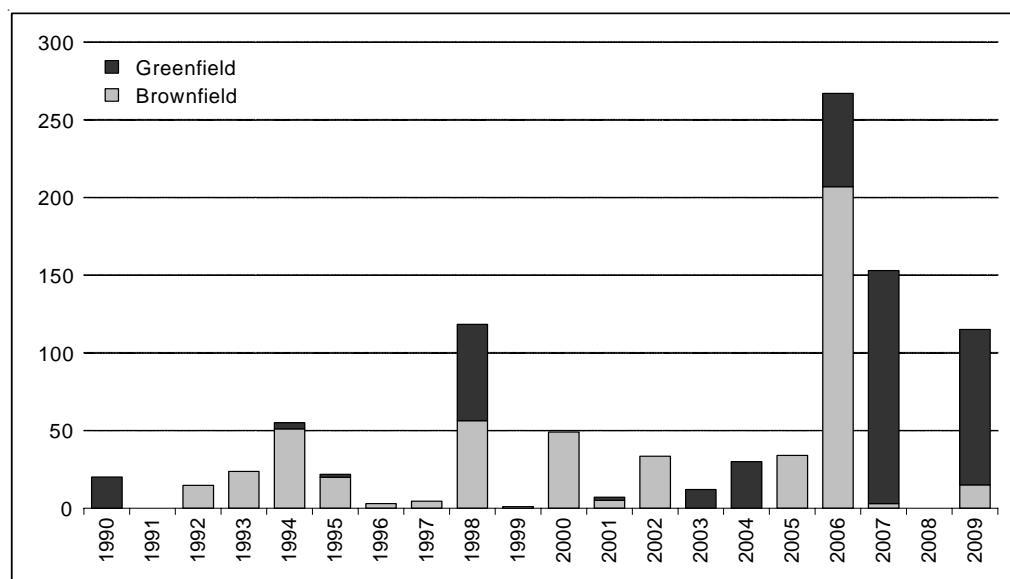


Figure 11. Announced investment intentions in sawntimber production (NZ\$ million, years of completion)

Source: MAF unpublished database.

Some sawmillers, particularly smaller operators, have been through a very difficult period, with some mill closures. Those significantly exposed to export markets are experiencing reduced margins because of external factors, such as high shipping costs, exchange rate movements and the slowdown in housing demand. The influence of these factors is revealed in the next section where the constraints to future investments are discussed.

Investments in sawmilling, modified by the mill closures, have facilitated the 16.5 percent increase in production levels, from 3.8 million m³ in 2000 to 4.4 million m³ in 2008. This increase has been shared between domestic and export markets, with the former consuming 60 percent of production and the latter 40 percent. Figure 12 illustrates the growth and consumption split.

² Brownfield investments are for the purpose of upgrading and/or expanding existing facilities.

³ Greenfield investments are investments in new facilities.

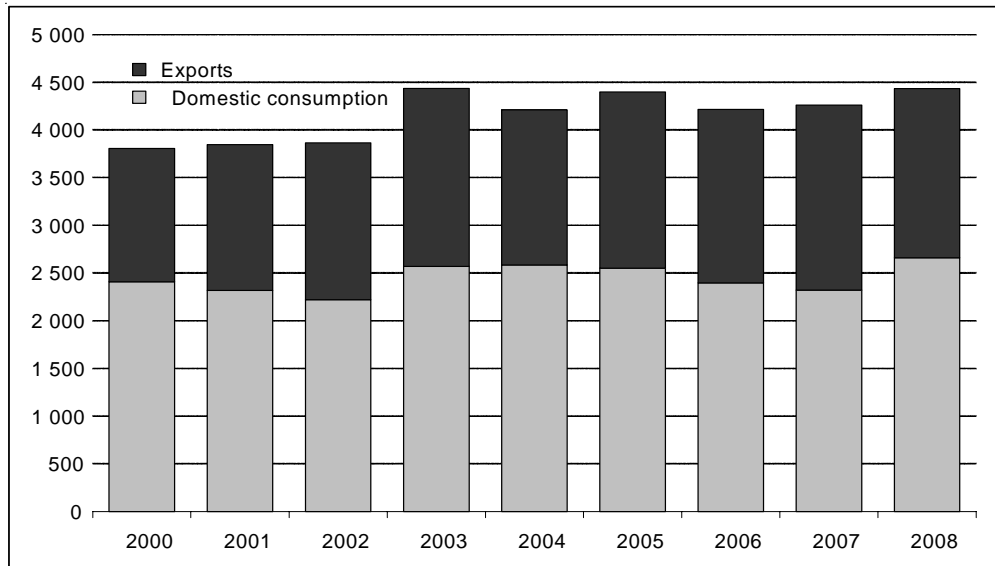


Figure 12. Production, consumption and export of sawntimber (1 000 m³)

Source: MAF (2008e).

Pulp and paper

The pulp and paper sector constitutes eight mills with the bulk of the capacity centred around the CNI at Kinleith and Kawarau, (both owned by CHH). Norske Skog and SCI Hygiene (tissue production) own paper plants at Kawarau while CHH has a paperboard plant at Whakatane. There are pulp mills at Karioi (Winstone Pulp), and Whirinaki (Pan Pacific Forest Industries), while in Penrose there is a small papermaking facility using recycled paper. Figure 10 places these mills on the map. Table 3 shows the approximate production capacities at each facility.

Table 3. Estimated maximum production capacities for pulp and paper mills (air-dried tonnes)

| Wood supply region | Mill | Kraft pulp | Mechanical pulp | New sprint | Paper board/linerboard | Tissue |
|--------------------|---|-----------------------|-----------------|----------------|------------------------|---------------|
| Auckland | CHH Paperboard (Penrose) | | | | 60 000 ^(a) | |
| CNI | CHH Pulp and Paper (Kinleith) | 270 000 | | | 327 000 | |
| | SCA Hygiene Australasia (Kawerau) | | | | | 60 000 |
| | Norske Skog Tasman (Kawerau) | 30 000 ^(a) | | 330 000 | | |
| | CHH Tasman (Kawerau) | 300 000 | | | | |
| | CHH Paperboard (Whakatane) | | | | 90 000 | |
| | Winstone Pulp International (Ohakune) | | 160 000 | | | |
| Hawkes Bay | Pan Pacific Forest Products (Whirinaki) | | 260 000 | | | |
| | Total | 600 000 | 420 000 | 330 000 | 477 000 | 60 000 |

Note: (a) Figures are dated and may not reflect current capacities.

As forest ownership has evolved, so too has the ownership of pulp and paper mills. The characteristic that sets pulp and paper ownership apart from forest ownership is the corporate global nature of the mill ownership as opposed to the TIMO structure that is prevalent in forest ownership. The corporate owners of many of the pulp and paper facilities are international specialists in producing and marketing their products with marketing and manufacturing bases around the globe for newsprint, tissue products and packaging products.

The profile of the pulp and paper sector is the result of transactions since the turn of the century, which have resulted in a number of significant ownership changes, some, albeit limited, Brownfield investment, and no Greenfield investment. The absence of any Greenfield investment is unsurprising given the large volume of fibre required for any new mill to be viable. As discussed in the next section of this paper, while wood supply is increasing, the growth is dispersed throughout the country, rather than in any one region. While Figure 13 is derived from a less than comprehensive database it, nevertheless, suggests the trends.

The discussion that follows overviews the transactional and investment history on a company and product basis.

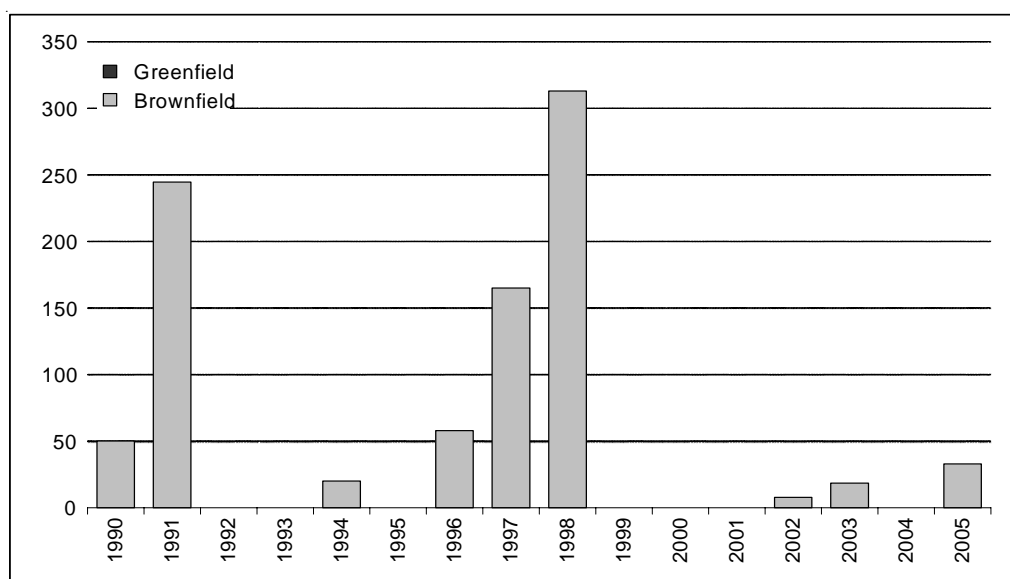


Figure 13. Announced investment intentions in pulp and paper production (NZ\$ million, years of completion)

Source: MAF maintained unpublished database.

Considering first the production of pulp, where CHH is the largest player, CHH purchased its Kinleith mill from New Zealand Forest Products (NZFP) in the late 1980s. Since acquiring the Tasman mill, the Kinleith mill has concentrated on softwood kraft pulp and kraftliner production, with production capacities as shown in Table 3. The mill has had numerous upgrades and modifications over its lifetime.

CHH's Tasman kraft pulp mill was purchased from Norske Skog in 2001. The mill produces a range of both softwood (*Radiata*) and hardwood (*Eucalyptus*) specialty pulps, with the latter being used by manufacturers of high quality paper, tissue and building products.

In 2004 CHH Tissue sold Caxton, its tissue pulp and paper facility, to Svenska Cellulosa Aktiebolaget (SCA), a Swedish-based forest product company. The company set up SCA Hygiene Australasia to manage its Australasian assets. Two years later, SCA closed its kraft pulp mill and ceased pulping base material at Kawerau. It now sources base pulp for tissue manufacture from the domestic and international markets.

These private sector transactions and mill upgrades have had a net positive impact on kraft pulp production, which has increased each year since 2004, as shown in Figure 14. The volumes being sold overseas have increased in both absolute and relative terms. The People's Republic of China has overtaken Australia as the largest export market. Australia, however, remains a significant market; so too do Republic of Korea and Indonesia.

This market diversity is a strength that contrasts with the vulnerability of mechanical pulp producers, and their reliance on the Japanese market. The production of mechanical pulp has

shrunk, export volumes have fallen and the bulk of production is being used domestically. The two key players are Pan Pac Forest Products Limited and Winstone Pulp International. From its inception, Pan Pac's main purpose was to provide wood fibre for its shareholders' papermaking operations in Japan. Ernslaw One has purchased Winstone Pulp International, one of the few remaining integrated forestry and wood-processing companies.

Paper (other than newsprint) and paperboard production has gone from strength to strength. CHH has two mills producing paperboard; one in Penrose and the other in Whakatane. Both mills rely on recycled fibre. They are, therefore, not directly linked to primary wood fibre supplies in the Auckland and CNI wood supply regions. Its Penrose mill sources its fibre solely from recycled newsprint and paper products. Its Whakatane mill produces paperboard packaging from mechanical pulp and semi-chemical and waste paper-based pulps. This contrasts with the situation in 1939 when the mill, one of the earliest built in New Zealand, processed resources from its then owner's (NZFP's) forest plantings established in 1928.

Newsprint production, on the other hand, has slumped significantly since 2005 reflecting the struggle by Norske Skog to be competitive in the global marketplace. In 2000, Norwegian pulp and paper giant Norske Skog purchased its mechanical pulping plant and the kraft mill from Fletcher Paper. One year later (as noted above), Norske sold the kraft facility and associated linerboard machine to CHH, leaving Norske Skog as the sole producer of newsprint in New Zealand. By 2003, the combination of energy price increases, ageing mills in need of upgrades and the consequential erosion of any competitive advantage, was causing Norske to contemplate closing its New Zealand operations. Offers of financial and other assistance by the government in 2004 succeeded in keeping these plans at bay and encouraged investment in the renovation and upgrade of the paper machines. But not for long. Just one year later, Norske Skog embarked on an Australasian rationalization and upgrade programme. The Tasman Paper Machine 1 was shut down, and the production from machines 2 and 3 was boosted to 330 000 tonnes per year. The net loss in production was compensated for with the upgrade of the Norske Skog Albury Mill in Australia.

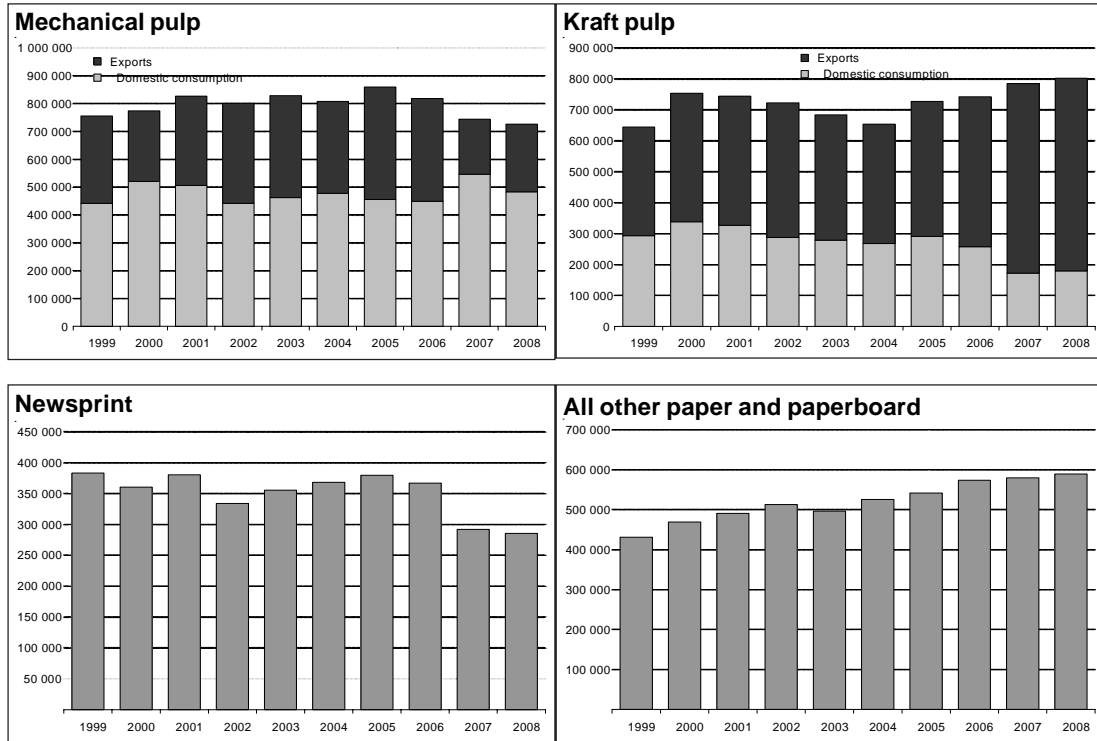


Figure 14. Production, consumption and export of pulp and paper (air-dried tonnes)

Source: MAF (2008e).

Panel products

Wood-based panels have been the growth sector of the New Zealand wood-processing sector. The significant investment activity in this industry sector is paying off in terms of rising production levels and export market growth. Figure 15 provides an indication of the extent of Brownfield and Greenfield investments. Again, these figures are indicative only and, in the particular case of panels, are not likely to reflect more recently announced investment intentions.

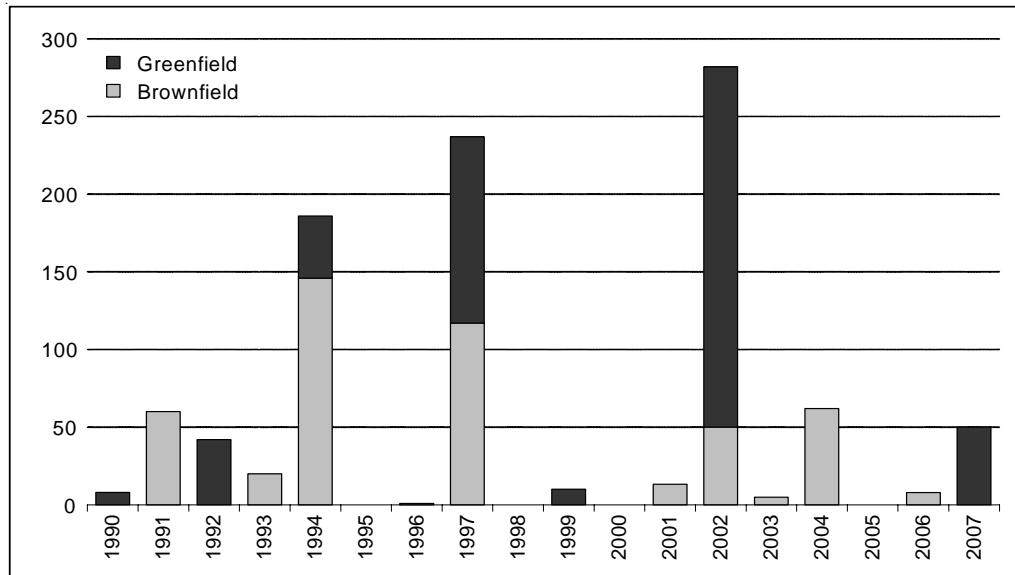


Figure 15. Announced investment intentions in panel production (NZ\$ million, years of completion)

Source: MAF unpublished database.

Fifteen plants throughout the country produce panel products (Table 4).

Table 4. Panel mills (location and type)

| Wood Supply Region | Mill | Fibreboard | Veneer | Plywood | Particle board |
|------------------------|--|------------|--------|---------|----------------|
| Northland | Juken New Zealand (Kaitaia) | ✓ | | | |
| | CHH Futurebuild (Whangarei) | | ✓ | | |
| Auckland | The Laminex Group (Kumeu) | | | | ✓ |
| | CHH Panels (Kopu) | | | | ✓ |
| CNI | CHH Wood Products (Mt Maunganui) | | ✓ | ✓ | |
| | CHH Engineered Wood Products (Tokoroa) | | ✓ | ✓ | |
| | The Laminex Group (Taupo) | | | | ✓ |
| East Coast | Juken New Zealand (Gisborne) | | ✓ | | |
| SNI | Juken New Zealand (Masterton) | | ✓ | | |
| Nelson/ Marlborough | Nelson Pine Industries (Richmond) | ✓ | ✓ | | |
| West Coast | International Panel & Lumber (Greymouth) | | | ✓ | |
| Canterbury | CHH Pinepanels (Rangiora) | ✓ | | | |
| | Gunns New Zealand Pty (Christchurch) | | ✓ | | |
| Otago/ | Dongwha Patinna NZ (Gore) | ✓ | | | ✓ |
| Southland | Southland Veneers (Invercargill) | | ✓ | | |

Note: The Juken New Zealand plant in Kaitaia produces Triboard, a unique product consisting of an inner core of wood strands sandwiched between surface layers of medium density fibreboard (MDF).

Source: MAF (2006; 2007c-e; 2008h-j).

Fibreboard is produced at four plants (Table 4). The substantial new capacity installed over the 1990s saw production levels more than triple. Nelson Pine Industries (a wholly-owned subsidiary of Sumitomo Forestry NZ Limited) installed three new lines between 1986 and 1997, making it the world's largest single-site producer of MDF. The rate of expansion has slowed and, consequently, production has as well, peaking at over 900 000 tonnes in 2006, before moderating in more recent years. Three-quarters of the output is exported, with half of what is exported being sold in Japan (Figure 16).

Plywood and veneer, notably laminated veneer lumber (or LVL) have been the main source of growth in the wood-panel sector in recent years. The production of both has close to doubled since 2000 (Figure 16). Plywood is produced at three plants, and veneer at eight.

Modern plants are operated by CHH, Juken Nissho and Nelson Pine Industries.

The growth of particle board production has been more modest but, nevertheless, positive and sustained. Of the 242 000 m³ produced annually, almost half is exported (Figure 16).

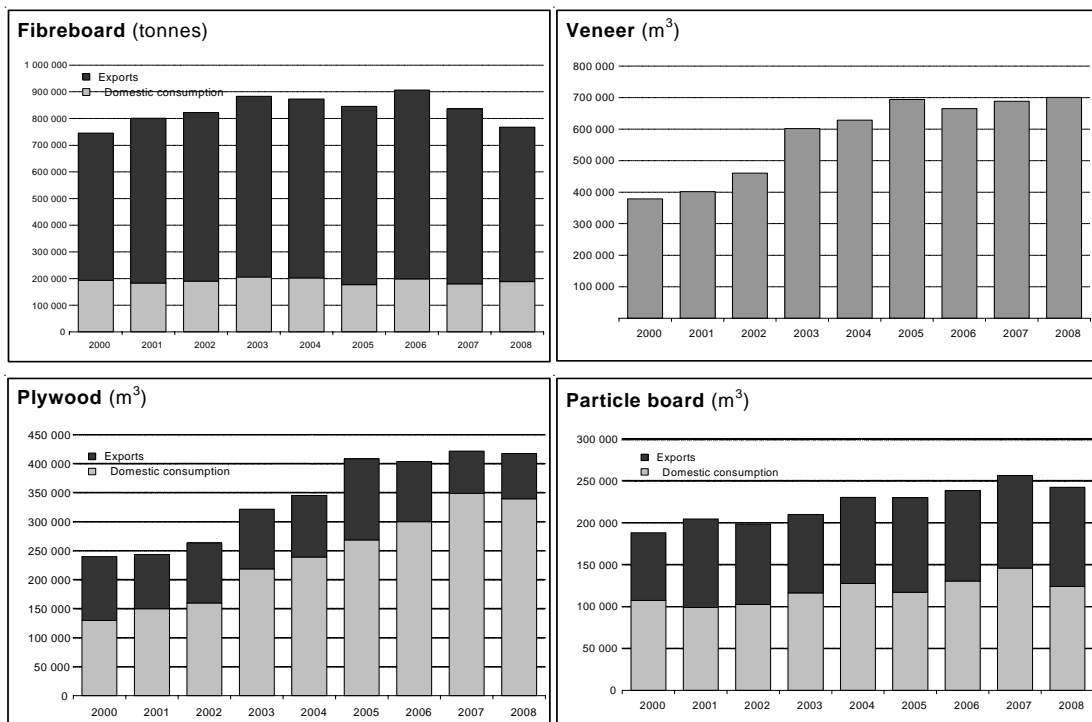


Figure 16. Production, consumption and export of panels

Source: MAF (2008e).

Investment opportunities

The investment opportunities in New Zealand’s forestry and wood processing are a function of the quantity and quality of the surplus wood coming on stream and the demand for the various forest products that could be produced from it.

Wood supply

MAF has produced interim national wood availability forecasts looking out to 2040, based on a mix of completed and interim regional availability forecasts (MAF unpublished). They are supply-based, modified by the harvesting intentions of large owners. While the forecasts show the potentially available wood supply, future harvesting decisions will be driven by the

range of demand-side influences and supply-side considerations, many of which are discussed in the next section of this paper.

In the early sections of this paper, where forestry and wood processing were overviewed, it was observed that the age-class distribution of New Zealand’s planted forests peaks for trees aged between nine and 15 years. This reflects the planting boom that occurred between 1992 and 1998. Harvesting of these areas will begin from around 2020. The resultant spike in wood supply is evident in the interim national forecasts, shown in Figure 17, where the annual harvest reaches more than 60 million m³.

In the later part of the forecast period (post 2030) the total harvest is projected to decline. This is in line with the age structure of the resource. The timing and extent of decrease will depend on the rate at which the 1990 forests are harvested.

The sustainable harvest level from the forests of the large owners is around 20 million m³ per year. An additional 2 to 7 million m³ per year is forecast between 2008 and around 2018 from the forests owned by the small-scale owners. As commented earlier in this paper, the wide range is attributed to the uncertain harvest intentions of these small owners.

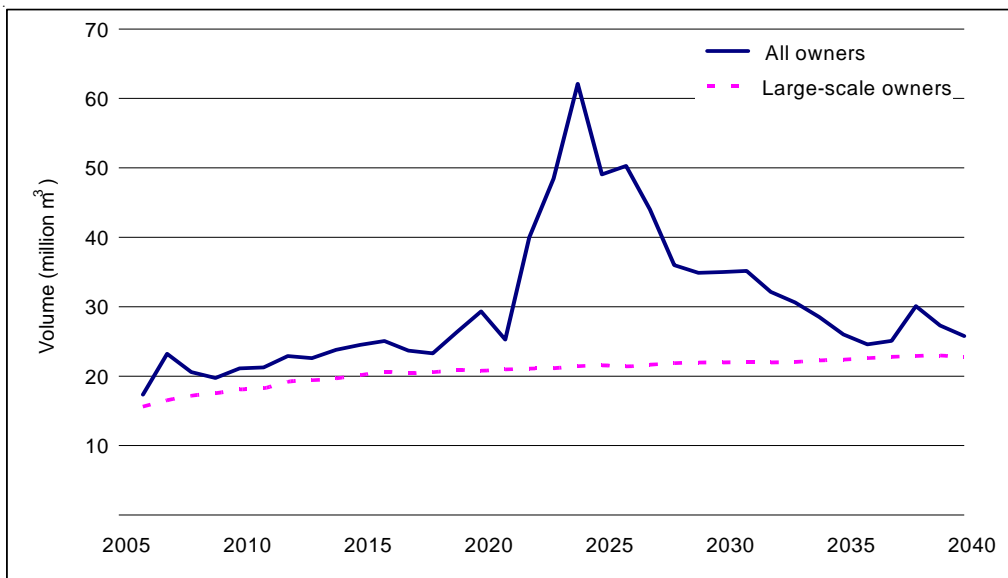


Figure 17. Interim national wood supply forecasts (million m³)

Source: MAF (unpublished).

Unsurprisingly, given how it dominates New Zealand’s planted forest estate, *Radiata* pine is expected to account for 90 percent of the future harvest.

The increasing availability of wood will be dispersed across most of the country. This contrasts with the current situation where the CNI is the dominant source of supply and, consequently, the hub of most wood-processing activity. Table 5 summarizes future expectations.

Table 5. Supply expectations by wood-supply region

| Wood-supply region | Expectations |
|------------------------|--|
| Northland | ↑ There will be large increases in wood availability in Northland over the next decade. This is a 'new' forestry region, with relatively undeveloped forestry infrastructure and wood-processing plants. |
| CNI | ↗ In the medium term, availability from CNI is expected to increase slightly from the current range of 7 to 9 million m ³ . CNI produces 45 percent of New Zealand's total harvest. This proportion is expected to decline over time, stabilizing at around 35 percent by 2018. |
| East Coast | ↑ There will be large increases in wood availability in the East Coast over the next decade. This too is a 'new' forestry region, with relatively undeveloped forestry infrastructure and wood-processing plants. |
| Hawkes Bay | ↗↑ In Hawkes Bay, the availability of <i>Radiata</i> pine remains relatively static until 2015. After that the harvest has the potential to increase from around 1.7 million m ³ to around 3 million m ³ around 2020. Most of the potential increase in wood availability during this period is from the small-scale owners. |
| SNI | ↑ Increases in wood availability are expected in parts of the SNI. The majority of the increase in volume will come from small-scale owners. This region has the largest number of small-scale owners and these forests are spread out over a large geographic area. |
| Nelson/ Marlborough | ↗↑ In Nelson, the forecasts indicate little change in wood availability over the next ten years. This contrasts with the situation in Marlborough, where there is increasing wood availability, primarily from the small-scale forest growers. After 2015, the combined Nelson/Marlborough harvest has the potential to increase from 2.3 million m ³ (2007) to around 3.2 to 3.5 million m ³ . |
| West Coast | ↓ Based on the harvest intentions of the major owners, wood supply is projected to decrease from 233 000 m ³ to 196 000 m ³ by 2015. Beyond 2015, while there is a relatively larger forest resource in the younger age classes, this may not lead to an expanded annual harvest as it is held by small-scale forest owners whose management and harvesting intentions are less well understood, and who may not be purely commercially focused. |
| Canterbury | → Wood availability in Canterbury is likely to be flat over the next ten years. Availability from the large-scale owners decreases from about 750 000 to around 500 000 m ³ . Increases in availability from the small-scale owners may compensate for this, but there is less certainty about the timing and volumes realized from this resource. |
| Otago/ Southland | ↗↑ The forecasts in Otago/Southland indicate that the availability of <i>Radiata</i> pine and Douglas fir will remain relatively static over the next decade. Looking further, there are substantial increases in wood availability leading up to 2020. |

Note: Table excludes the Auckland wood-supply region as information on this region was not publicly available at the time of writing. Source: MAF (2006; 2007c-e; 2008h-j; unpublished).

The increasing volumes that are surplus to domestic requirements can either be exported as logs or processed. While log exports are expected to remain a major component of the New Zealand forest product export trade, the industry's success lies in further value-added domestic processing. The processing potential is a function of the surplus volumes, as just discussed; what products the properties of the wood coming on stream are suited to, and the market potential, are discussed next.

Wood properties

New Zealand's *Radiata* pine wood properties vary by wood-supply region. For instance, trees in Northland tend to be higher in wood density and with shorter internodes; making them more suitable for structural uses. In contrast, trees in Otago/Southland have lower wood density, but with longer internodes and whiter, more finely textured wood. This makes the latter more suited to clearwood production for furniture, mouldings and veneer. Other regions fall in between these two extremes with a wide range of processing opportunities available.

International forestry consultant, Jaakko Pöyry, has developed the business case for investing in value-added processing in New Zealand. Its assessment of the properties of the wood supply expected in each region, and what products that supply is suited to, are contained in Table 6.

Table 6. Wood properties and suitability for processing by wood-supply region

| Regions | SNI, West Coast, Canterbury, Otago/Southland | CNI (inland), East Coast, Hawke's Bay, Nelson/ Marlborough (inland) | Northland, Auckland, CNI (coastal), Nelson/ Marlborough (coastal) |
|--|---|--|--|
| Log category | <i>Low density</i> | <i>Medium density</i> | <i>High density</i> |
| Small knotty logs: Thinning, top logs. | Mechanical pulp for newsprint and magazine paper, MDF. | Kraft liner (high burst and tanella strength), particle board. | Treated posts, strong paper (tear strength). |
| Large knotty logs: Unpruned butt and 2nd logs (a) logs with small knots (b) logs with large knots. | Clear-cutting for fingerjointed mouldings, and boards. | Industrial plywood. General utility timber (untreated) for temporary construction, packaging, pallets. | Engineered framing timber. Laminated veneer lumber stock. Construction and transmission poles. Laminated beam stock. |
| Large clearwood logs: Pruned butt logs. | Clear timber for panelling, moulding, furniture stock, sliced veneer. | Face veneer for plywood. All purpose clearwood uses. | Furniture stock; clear framing; rails; post and beam construction timber. |

Source: Jaakko Pöyry (2003).

Market opportunities

The above discussion describes in turn the quantity and quality of the potential future supply. Here, the demand side is examined: the likelihood of value-added forest products, produced in New Zealand, being sold overseas.

Throughout the various export markets a number of key opportunities are available for New Zealand products. These opportunities range from the relatively low-value materials through to secondary and tertiary value-added products.

In line with increasing quality requirements in key end-use segments, markets such as Japan are expected to become significant users of engineered wood products. The United States market is forecast to continue to present increasing opportunities for clear and remanufactured products. Markets such as China are expected to present strong opportunities for a wide range of products. Jaakko Pöyry Consulting has identified the key opportunities for New Zealand. These are captured in Table 7.

Table 7. Product by market opportunity matrix for 2010

| | Japan | China | Rep. of Korea | India | Other Asian | USA | Aus tralia | Europe | Other | Total |
|-------------------------|-----------|-----------|---------------------|-----------|----------------|-----------|---------------|-----------|-----------|-----------|
| Packaging | 3 | 3 | 3 | 4 | 1 | 1 | 2 | 1 | 1 | 19 |
| Temporary construction | 3 | 4 | 3 | 4 | 2 | 1 | 2 | 1 | 2 | 22 |
| Structural | 2 | 2 | 1 | 2 | 2 | 3 | 3 | 2 | 2 | 19 |
| Engineered | 4 | 2 | 1 | 1 | 2 | 2 | 3 | 1 | 2 | 18 |
| Clearwood | 2 | 4 | 2 | 4 | 4 | 5 | 3 | 3 | 3 | 30 |
| Veneer (core) | 4 | 4 | 3 | 4 | 4 | 3 | 3 | 3 | 3 | 31 |
| Veneer (face) | 3 | 3 | 2 | 1 | 4 | 2 | 3 | 1 | 3 | 22 |
| Plywood | 4 | 3 | 3 | 2 | 3 | 3 | 3 | 2 | 3 | 26 |
| LVL | 4 | 2 | 1 | 1 | 2 | 2 | 3 | 2 | 2 | 19 |
| Particle board | 2 | 1 | 1 | 1 | 2 | 1 | 3 | 2 | 3 | 16 |
| MDF | 4 | 3 | 3 | 2 | 4 | 4 | 3 | 3 | 4 | 30 |
| Remanufactured products | 3 | 4 | 3 | 2 | 3 | 4 | 4 | 3 | 4 | 30 |
| Components | 3 | 4 | 2 | 4 | 3 | 5 | 4 | 3 | 4 | 32 |
| Furniture | 4 | 3 | 3 | 2 | 3 | 4 | 4 | 3 | 4 | 30 |
| Mechanical pulp | 2 | 4 | 3 | 3 | 3 | 1 | 1 | 1 | 1 | 19 |
| Total | 47 | 46 | 34 | 37 | 42 | 41 | 44 | 31 | 41 | |

Score: 1 is limited opportunity; 5 is strong opportunity. Source: Jaakko Pöyry (2003).

New Zealand's competitiveness in the European market is limited due to several factors. High freight distances (and hence costs) reduce New Zealand's cost competitiveness in Europe.

Several low-cost countries supplying hardwood products, such as China, are better positioned than New Zealand.

Tentative conclusions

Considering both the supply- and demand-side conditions, a number of conclusions can tentatively be reached.

- The future demand for solid wood products is skewed towards the higher value end of the spectrum.
- The opportunity is high for panels, such as LVL, remanufactured forest products, components and furniture. Northland and the Nelson/Marlborough coastal areas are well-placed to capitalize on these opportunities, given the significant increases in wood supply expected, and the properties of the wood.
- The growth in wood supply from the East Coast, Hawkes Bay and the inland areas of Nelson/Marlborough, and the properties of this wood, creates the potential to capitalize on opportunities in the production of panels, such as plywood and face veneers, and clearwood uses.
- There are limited market opportunities for low-value uses, such as packaging or structural uses.
- The greatest opportunity for residues, sourced from the future uncommitted supplies of pulp logs plus the residues from any increase in solid wood processing, is MDF. The properties of the increasing volumes of wood in SNI and Otago/Southland are suited to production of MDF.
- While the same residues could also be used for pulping, the market opportunity is limited, and the increases are too dispersed to provide sufficient material for any Greenfield investment.

Whether or not this investment potential will be realized depends on how it will be modified by demand-side influences, supply-side considerations and legislative constraints. On the demand side these include fluctuations in the exchange rate; the slump in housing demand in domestic and several key export markets; the need to address New Zealand's stagnating and, in some cases, shrinking share of forest product export markets; and market access issues, notably NTTMs. On the supply side, relevant considerations include the availability and cost of selected inputs – labour, shipping and energy – alternative uses of the land and the investment dollar and the comparative advantage of New Zealand forestry and wood processing. Legislative constraints include the emissions trading legislation and the Resource Management Act.

The next three sections of this paper discuss in turn the impacts of these influences, considerations and constraints and advise on the options to address them.

Demand-side influences

Exchange rate

Impact

The expected future return from forest products is the key determinant of investment in forestry and wood processing. The limited size and saturation of the New Zealand market,

coupled with the increasing volumes of wood coming on stream, mean that the price and quantity of forest products that can be sold overseas are what will drive future returns. As is evident in Table 8, after a year of constrained export receipts, expectations are that both the prices and quantities of forest products exported will recover and grow.

Table 8. Forestry export prices and volumes (2005-2012)

| Year to 31 March | Actual | | | | Forecast | | | |
|---|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|
| | 2005 | 2006 | 2007 | 2008 | 2009 | 2010 | 2011 | 2012 |
| Logs and chips | | | | | | | | |
| FOB price (NZ\$/m ³) | 78 | 84 | 104 | 95 | 103 | 112 | 121 | 128 |
| Export volume ('000 m ³) | 5 649 | 5 753 | 6 561 | 7 070 | 7 423 | 7 736 | 7 891 | 8 049 |
| Timber | | | | | | | | |
| FOB price (NZ\$/m ³) | 438 | 396 | 415 | 410 | 390 | 415 | 454 | 488 |
| Export volume ('000 m ³) | 1 847 | 1 818 | 1 939 | 1 773 | 1 690 | 1 694 | 1 728 | 1 762 |
| Panels | | | | | | | | |
| FOB price (NZ\$/m ³) | 511 | 451 | 454 | 474 | 441 | 486 | 535 | 575 |
| Export volume ('000 m ³) | 1 132 | 1 125 | 994 | 920 | 904 | 920 | 929 | 938 |
| Pulp | | | | | | | | |
| FOB price (NZ\$/tonne) | 585 | 559 | 734 | 705 | 755 | 825 | 899 | 966 |
| Export volume ('000 tonnes) | 839 | 854 | 810 | 866 | 901 | 919 | 928 | 937 |
| Total forestry export value (NZ\$ million) | 3 255 | 3 164 | 3 548 | 3 397 | 3 434 | 3 810 | 4 220 | 4 580 |

Note: FOB – free on board: the value of the goods at the port of export and loaded onto a vessel for transportation out of the country of origin.

Source: MAF (2008d).

The primary driver behind these expectations is the exchange rate. The strength of the NZ dollar against the United States dollar explains much of the 4.3 percent fall in export receipts in 2008 relative to a year earlier. This arises because most forest products are sold in US dollars. So while FOB prices received for forest products increased over the year, the high value of the NZ dollar more than wiped out all of the gains.

Secondary drivers include high shipping rates and weak housing markets in domestic and export markets. (The housing slump is discussed immediately below; shipping rates are discussed in the context of supply-side considerations.)

The recovery and growth expected over the forecast period is due to expectations of a depreciation in the exchange rate. The assumed weakening of the NZ dollar is forecast to drive steady improvements in prices.

The fluctuating exchange rate is particularly deleterious to the forestry and wood-processing sectors because of the long-term investment needed in both forests and processing plants (Sherwin 2007). With the NZ dollar varying between 39 and 80 US cents over the period 2000 to

2008 (MAF 2008a), it would take a considerable leap in faith to invest in forestry on the back of the above projections.

Potential directions for policy and sector initiatives

The exchange rate vulnerability of the forestry and wood-processing sectors can be addressed if:

- forest products are sold in a wider range of markets;
- greater value is added within New Zealand before exporting the final products; and
- the ‘real’ impacts of monetary policy have a greater bearing on its operation.

While the government can indirectly influence the first two options, its role *vis-à-vis* the third is more direct but, perhaps, also more questionable.

The rationale behind the first is that the more diversified the markets, the less exposed will the forestry and wood-processing sectors be to the currency fluctuations in any one market. The rationale behind the second is that by moving up the value chain, forest product exporters’ transition from being ‘price takers’ to a ‘price makers’, hence, increasing their resilience to exchange rate fluctuations. Market and product diversification is, of course, the choice of industry, not the government. Nonetheless, the government can play a role in facilitating those choices, including by:

- promoting New Zealand and its products in overseas markets;
- addressing the barriers to market access and trade; and
- supporting research and development (R&D).

The first two of these roles is discussed further below under the headers ‘Market development’ and ‘Market access’.

Regarding support for R&D, some have claimed that this is the area of public policy that has had a, if not the, major effect on forestry and wood processing in New Zealand because corporatization and privatization are the operation of monetary policy (Sherwin 2007; BERL 2008). The primary objective of New Zealand’s monetary policy operations is to maintain inflation within the range of 1 and 3 percent. Other considerations are secondary, including encouraging investment in New Zealand’s productive industries. The means for giving effect to the primary objective is to influence interest rates. BERL (2008) argues that the operation of monetary policy has led to high interest rates and, thereby, exchange rates that are generally higher than the market optimum for growth of the New Zealand economy.

There are competing schools of thought on whether this approach is the ‘best’ approach, with no shortage of argument, analysis and commentary. There are also the views that in the long run monetary policy has little impact on the ‘real’ economy, and that price stability is conducive to investment decisions. In opposition are those who argue that monetary policy is an important stimulatory tool in the government’s kit.

The New Zealand approach to monetary policy recognizes that monetary policy can have a short-term real impact. It thereby allows for a rate of inflation greater than zero, a target range (rather than a specific point), and for secondary considerations to be taken into account.

Evidence of this is the successive cutting of the Official Cash Rate (OCR)⁴ by a cumulative 5.75 percentage points in the nine months between July 2008 and April 2009 – an unprecedented rate of reduction, made in response to the deteriorating economic conditions (RBNZ 2009).

Housing slump

Impact

Housing demand slumped in the domestic and several key forest product export markets in the wake of the global financial crisis. The demand for both timber and panel products was impacted (Table 8 and MAF 2008d).

New Zealand’s housing boom has come to a screeching halt. Building consents issued in New Zealand have fallen 41 percent since mid-2007 and are at their lowest level since January 1983. Figure 18 illustrates the trends of more recent years. Forest products impacted include sawntimber, fibreboard and mouldings (MAF 2008d).

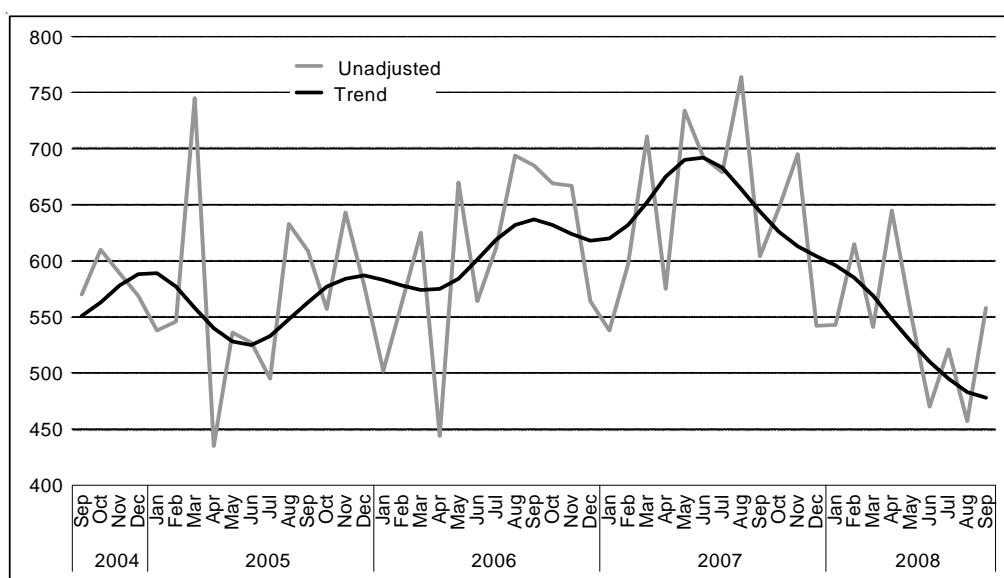


Figure 18. Building consents (NZ\$ million)

Source: Statistics New Zealand (2008a).

In 2008, the outlook was pessimistic. According to the Reserve Bank of New Zealand, New Zealand’s central bank, this ‘correction’ is not expected to let up for a number of years (RBNZ 2008). Tighter credit conditions, high mortgage rates, lower real income growth and rising building costs (relative to existing house prices) are what lie behind this weak outlook.

⁴ The OCR is the rate at which banks can settle their accounts with the Reserve Bank.

Fortunately, conditions have improved more quickly than initially anticipated, with house prices rising over 2009 from their early 2009 trough. Improving conditions in the housing market are expected to be mirrored in the residential building market (RBNZ 2009).

The housing market slump impacted New Zealand's forest product export markets. In its largest sawntimber export market, the United States, housing starts began their downwards trajectory in mid-2007. In Australia, New Zealand's second largest sawntimber export market, the situation was similar. The June 2008 quarter housing data were the weakest observed since 2004 (APM 2008). Widespread falls were recorded across all of Australia's major capitals. Japanese housing starts had also been weak since towards the end of 2007, impacting the demand outlook for both sawntimber and panel products (MAF 2008d).

The good news is that as conditions have improved globally so too have the situations and outlooks of each of these markets. The rollercoaster ride, however, illustrates the vulnerability of New Zealand's forest products to conditions in major markets.

Potential directions for policy and sector initiatives

The credit pressures that characterize the global financial crisis have meant that the interest rates faced by households were higher than would otherwise be the case, thereby impacting housing demand in the domestic and export markets overviewed above.

In New Zealand, this was reflected in the higher cost of funds faced by lenders relative to the OCR. To counteract expectations of weakness in the housing market the Reserve Bank responded by reducing the OCR. The central banks of other countries, such as Australia, similarly eased their monetary policy settings. The improving situations and outlooks domestically and in export markets suggest the success of these adjustments.

This, however, is only part of the solution. Longer term resilience from the vagaries of conditions in a handful of markets suggests the criticality of initiatives to develop existing and new markets.

Market development

Impact

While some of the future growth in forest products surplus to domestic requirements may be absorbed by the expansion of export markets as their populations grow, economies develop, and the trend towards urbanization continues (MAF 2008a), it would be a dangerous strategy to rely solely on this growth. As just evidenced, the downturn in global economic conditions carried with it the risk of an easing in the global demand for forest products. The full potential for New Zealand's forestry and wood processing will only be realized if the sectors increase their share of the global trade. That means increasing its share in current export markets and developing new markets.

Given this context, the current situation (as shown in Figure 19) provides little cause for celebration:

- **Logs:** Since 1997, New Zealand's share of the global trade in coniferous industrial roundwood has close to halved.
- **Sawntimber:** New Zealand exports of sawntimber have stagnated at around 2 percent of the global trade.
- **Pulp:** Having recently commanded close to 30 percent of the global trade in mechanical pulp, New Zealand's export share has close to halved. New Zealand exports of chemical pulp have stagnated at around 1 percent of the global trade.
- **Paper:** New Zealand exports of newsprint have similarly stagnated at around 1 percent of the global trade. Having recently commanded close to 12 percent of the global trade in other paper and paperboard, New Zealand's export share has dropped to around half this figure.
- **Panels:** During the late 1980s through to the mid-1990s New Zealand increased its share of global exports of MDF. In more recent years, New Zealand has lost significant ground with the New Zealand export share slipping from more than 8 percent to around just 3 percent.

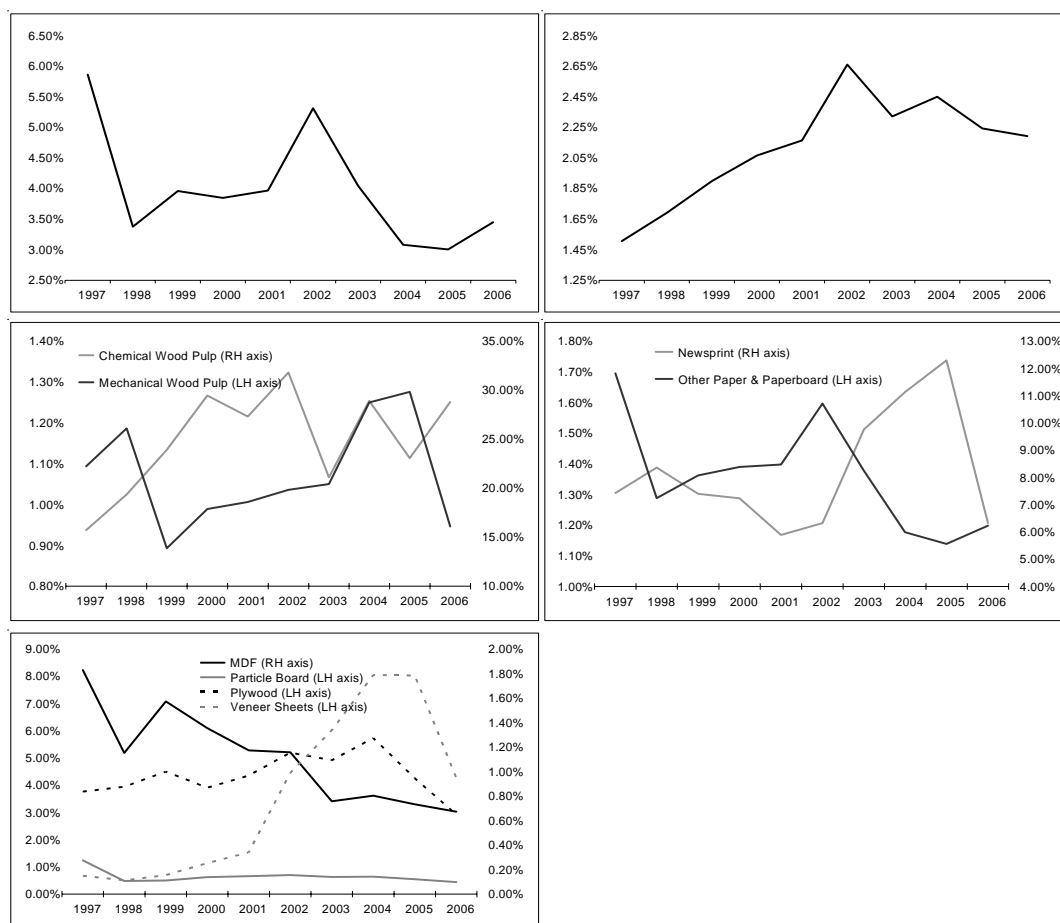


Figure 19. New Zealand's share of global forest product exports: value of New Zealand exports relative to world exports

Source: FAOSTAT.

Contributing to these trends is the exposure of New Zealand's forestry and wood-processing sectors to the economic conditions and consequent fluctuations in demands from their current limited number of significant export markets for forest products. In 2006/2007, only five countries (Australia, Japan, China, Republic of Korea and the United States) imported more than NZ\$100 million of forest products from New Zealand (MAF 2008a). Exports of products such as paper and paperboard, fibreboard and other panel products are heavily focused on one country.

The other contributing factors of cost competitiveness and productivity are discussed in the next section of this paper where supply-side considerations are reviewed.

Potential directions for policy and sector initiatives

The potential to increase future returns should provide sufficient incentive for players in the forestry and wood-processing sectors to individually and collectively seek to develop export markets and become more cost competitive in those markets. Cost competitiveness issues are discussed below in the context of the supply-side considerations. Unless shipping costs are addressed, New Zealand will continue to find it difficult to expand export markets beyond the Asia-Pacific region.

The Forest and Wood Products Industry Strategic Plan identifies a number of market development initiatives for collective pursuit, including:

- sharing the market intelligence of individual companies on trends, opportunities and competitive activities in key overseas markets, for the good of the industry;
- tapping customer preference for environmentally-friendly and sustainable forest products by raising the awareness of the environmental benefits of timber-based products over the alternatives, promotional campaigns and certification; and
- exploring the potential for the use of the NZ wood brand as a quality mark.

The government can assist these efforts through initiatives that complement and crowd in (not out) individual and collective action. An example of this would be generic promotional efforts that communicate the quality of New Zealand exports.

Certification

Impact

As markets for forest products have grown, so too has the environmental consciousness of the customers of these products. Customers are increasingly requiring that forest products are produced from wood fibre from sustainable forests. This behaviour has grown since a move was initiated by UK retail chains some years ago.

Potential directions for policy and sector initiatives

A subset of the market development initiatives mentioned above is the demand for, and trend towards, certification. The potential for markets or distributors to decline non-certified products has led to many wood processors buying logs only from Forest Stewardship Council

(FSC) certified forests. These processors believe that the demand from customers for certification will grow over future years. FSC certification indicates that products have come from forests managed according to FSC principles. These include requirements concerning sustainable harvest; protection of soil resources, biodiversity and the livelihood of forest communities; and restriction in use of pesticides and genetically modified organisms. FSC chain-of-custody certification indicates that a robust system is in place for tracking timber from forest of origin to consumer.

This is a market-based solution to the preferences of customers. There is no call for the government to intervene.

Market access

Impact

A prerequisite to developing markets for New Zealand forest products is having open access to those markets.

While global trade discussions continue to be troublesome, the successful negotiation of bilateral and regional trade agreements means that tariff barriers are less of a restraint on trade than in the past. For instance, in 2008, New Zealand became the first developed country to sign a free trade agreement with China. The agreement is a boon for forestry and wood-processing as it binds existing favourable conditions *vis-à-vis* some forest products and secures the elimination of tariffs on a limited number of others.

Of greater concern are non-tariff trade measures (NTTMs), which are prolific in the forest product trade. The claimed motivation for NTTMs is changing from economic to environmental. Widely encountered NTTMs that have significant trade impacts are:

- Traditional NTTMs: Logging bans, restrictions on the export of unprocessed material and quotas are significant in Indonesia, Malaysia, Thailand, the United States and Canada.
- Customs and entry procedures: These are an issue for some products and countries, as are phytosanitary regulations.
- Illegal activities: Often the result or consequence of some NTTMs, these are distorting market prices (downwards) and trade.
- Afforestation incentives: Most countries provide some form of incentive for afforestation.
- Restrictive standards and acceptance routes: Building costs and standards can be particularly restrictive, such as the prescriptive nature of the Japanese Agricultural Standards.

(FIDA 2006)

Potential directions for policy and sector initiatives

New Zealand trade officials and representative organizations from the forestry and wood-processing sectors are working in partnership to ensure markets remain open and NTTMs are minimized. Their efforts are supported by the government's Trade Access Support Programme (TASP). This programme funds practical efforts to break down barriers that may be

constraining New Zealand's exports of goods and services. In the specific case of forestry and wood processing this partnership approach is facilitating:

- Effective government-to-government influence by ensuring that the New Zealand Government's efforts are informed and directed towards the most pressing issues.
- Pan industry positions are being developed on those issues, such as the illegal and unsustainable wood products.
- Industry engagement in the more technically-based negotiations, such as the efforts of the international standard-setting bodies to set standards and procedures.
- The government's efforts to reassure overseas markets of the quality of New Zealand forest products.
- Research into the market opportunities for forest product exporters and the barriers they face.

The Forest and Wood Products Industry Strategic Plan, 2006-2021 (Woodco 2008) supports the continuance of this partnership approach and a dynamic focusing of effort.

Supply-side considerations⁵

Labour

Impact

Employment in forestry and wood processing has been in decline since 2003 (Figure 20). In 2007, the sectors provided jobs for around 20 000 persons in New Zealand, more than 5 000 less than a mere five years earlier. The declines have been experienced in most industry segments and are particularly marked in forestry and logging, and sawmilling (Figure 20).

⁵ Road and rail infrastructure and costs are not discussed under this heading as they are not a consideration of similar magnitude to the others discussed here.

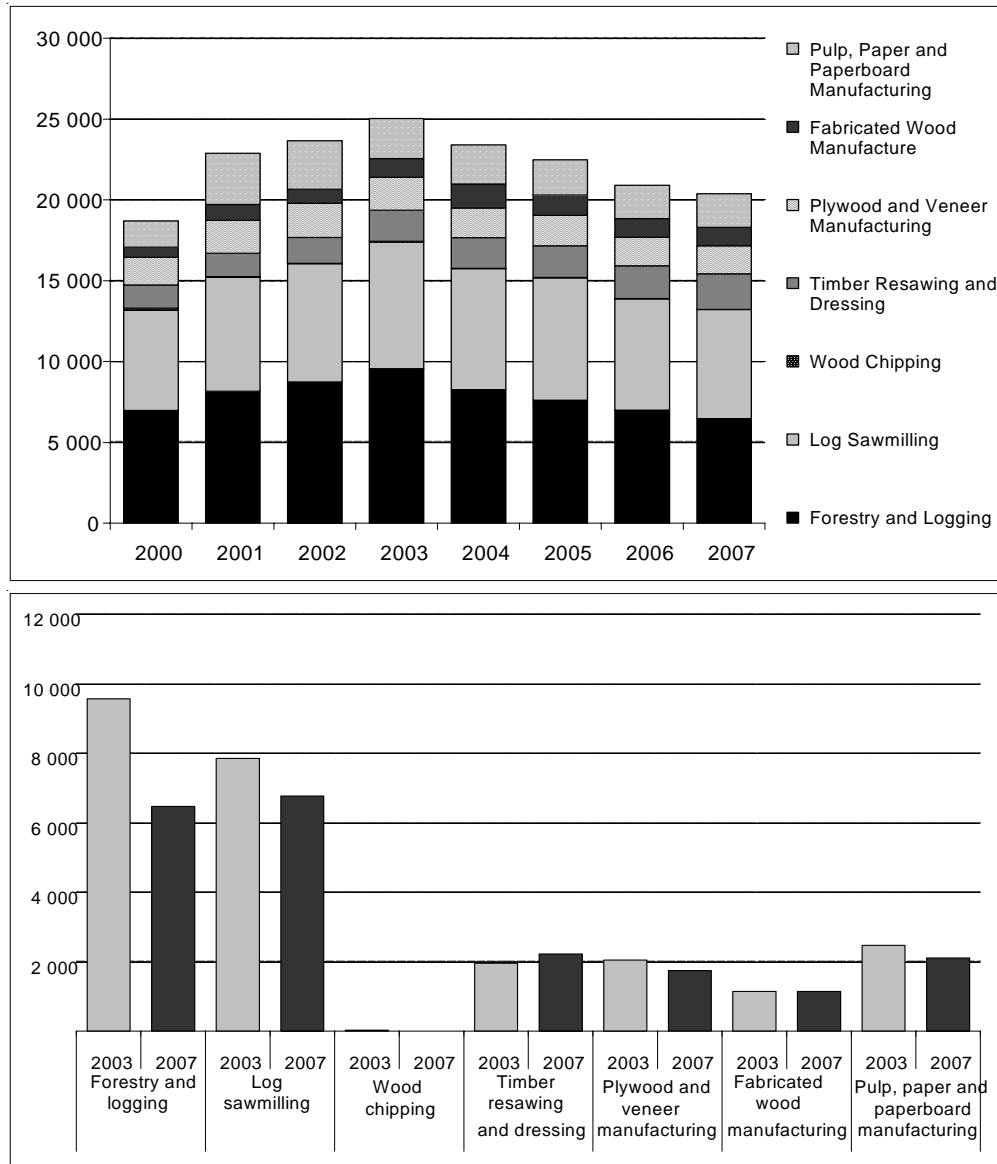


Figure 20. Employment in forestry and first stage processing. Number of full-time equivalent persons engaged as of mid-February

Source: MAF (2007b).

This situation will need to turn around if the increasing volumes of wood becoming available are to be harvested and processed domestically. BERL (2008) has estimated the number of persons that would need to be engaged: between 2007 and 2011 the sector will each year need to find persons to fill 4 000 to 5 000 jobs, with labour demand climbing over the forecast period. This is the sum of some 600 to 1 000 new jobs created within the sectors each year, plus annual turnover of around 4 000 employees. Table 9 records BERL's projections.

Table 9. Projected additions to employment 2006-2011 (years ending March)

| Additions needed to employment | Base year 2006 | Projected | | | | |
|--------------------------------|-------------------|-----------|-------|-------|-------|-------|
| | | 2007 | 2008 | 2009 | 2010 | 2011 |
| Forestry and harvesting | 8 000 | 1 720 | 1 920 | 1 700 | 1 760 | 1 850 |
| Solid wood | 7 500 | 945 | 1 086 | 926 | 926 | 1 147 |
| Pulp | 1 200 | 8 | 58 | 58 | 58 | 58 |
| Paper | 700 | -59 | 31 | 31 | 31 | 21 |
| Panel products | 2 000 | 53 | 260 | 167 | 260 | 244 |
| Furniture | 5 700 | 285 | 285 | 471 | 479 | 488 |
| Other forestry products | 9 400 | 940 | 940 | 1 354 | 1 391 | 1 429 |
| Total additions to employment | 34 500 | 3 892 | 4 580 | 4 706 | 4 916 | 5 237 |

Source: BERL (2008).

The growth in labour demand will be in all industry segments (Table 9) and in most wood-supply regions. However, it will differ on a firm-by-firm basis. The projections have been informed by a comprehensive industry survey. Although 51 percent of firms surveyed said business plans remained at status quo for the next five years, 37 percent said they would expand, and only 12 percent said they would contract. The main areas for expansion were larger solid wood and furniture firms in Auckland, CNI and Otago/Southland. Those contracting were mainly the smaller firms in silviculture and logging in most regions (except CNI and Auckland).

At least as important as the quantity of expected labour demand is the skills sets of future employees. The projected numbers of new employees assume no productivity increase. If persons engaged are more highly skilled and consequently more productive, then the numbers of persons required will be less. With a 10 percent productivity increase only the turnover numbers are required.

The main skill requirements of the forestry and wood-processing sectors are in the trade and technical (for example, machine operator) areas. As technology advances many firms expect that they will require higher skills. There is also a growing requirement for 'soft' skills (e.g., life skills, people skills and leadership).

A number of considerations constrain the ability of the forestry and wood-processing sectors to attract and retain skilled staff. The first is the shortage of skilled people (regionally and nationally). An earlier (than the BERL) training-needs analysis undertaken in 2003/2004 by Forme Consultancy identified the shortage of skilled labour as having the most significant impact on future employment in the industry (MAF 2006). Second, is that the forestry and wood-processing sectors have a poor image as a prospective employer (Brown and Ortiz 2001). Third, is the ability of the sector to pay competitive wages. As a consequence, the forestry and wood-processing sectors are forced to recruit from the lower echelons of the labour pool. According to the 2006 New Zealand Census, 35 percent of people in the forestry and wood-processing sectors had no qualifications and 70 percent were low skilled (with no more than a basic high school equivalent level education). This situation will need to be addressed if future demand for skilled labour is to be realized.

Potential directions for policy and sector initiatives

The above discussion above suggests the importance of:

- lifting the profile of the forestry and wood-processing sectors and promoting careers within those sectors;
- future planning to identify and address skill requirements and gaps within the sectors; and
- better retention strategies.

The Forest Industries Training and Education Council (FITEC) is the industry training organization (ITO) for the forestry and wood-processing sectors. Its legal responsibilities include setting national standards and qualifications, and developing training programmes and arrangements for their delivery. The BERL (2008) consultancy, which informed this discussion, was commissioned by FITEC. Its purpose is to inform the strategic planning of the ITO. In addition to its legal responsibilities, FITEC performs a number of other roles including promoting forestry and wood processing as a career choice.

Shipping

Impact

New Zealand's geographic location in the lower reaches of the Pacific Ocean means that unless ways to economize on shipping costs are found, the Asia-Pacific region will remain the focus of New Zealand forest product exports (MAF 2008a).

The cost of freighting logs to New Zealand's major export markets (for example, China and Republic of Korea) tripled over a period of just five years. In 2002, logs could be freighted for US\$20/m³. By 2007 brokers were quoting figures in excess of US\$60-70/m³ (MAF 2008e). Over 2008, however, freight rates dropped significantly to well within their long-term average (Figure 21).

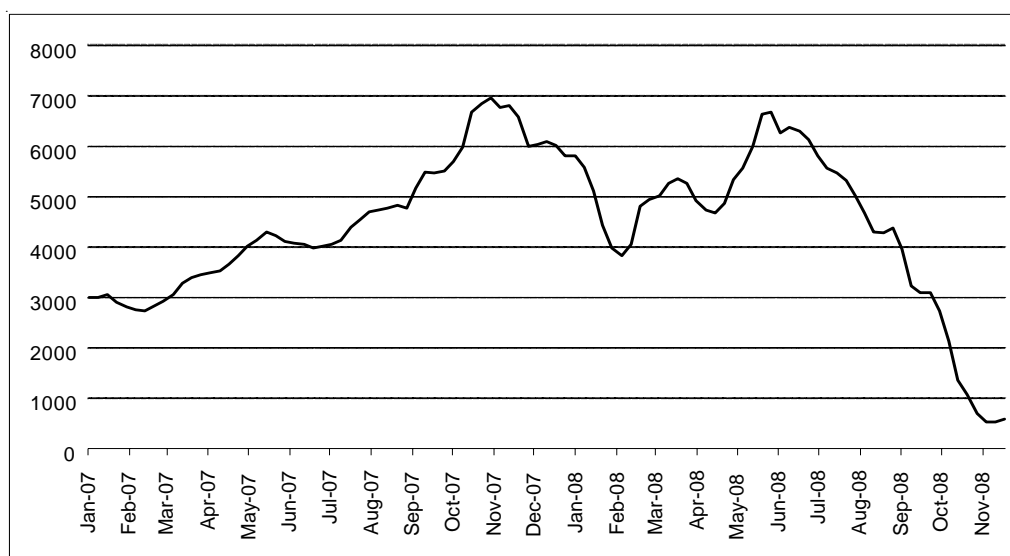


Figure 21. Freight rates (Baltic Exchange Supramax Index)

Source: Datastream (an online database).

Preserving the log trade, during the period of escalating freight rates, was a difficult proposition for forest growers and exporters. High shipping costs placed New Zealand, a country distanced from its major markets, at a disadvantage. The lower the value of the forest product, the greater the disadvantage, as shipping costs account for a larger proportion of price.

When freight rates were high, in some areas of New Zealand shipping logs became inefficient or uneconomic and a constraint on log exports. Some of the more optimistic commentators noted the potential for these conditions to act as a spur to encourage additional processing of logs (see, for example, MAF [2008a]). Exporting sawntimber (rather than logs) reduces the relative cost of freight and provides exporters with additional transport options, in particular the use of scheduled container services. However, the domestic wood-processing industry is not set up to take the relatively smaller logs that would have otherwise been exported as most sawmills are set up for larger logs (BERL 2008).

Potential directions for policy and sector initiatives

To successfully operate in this environment of fluctuating shipping costs, exporters need to look closely at their supply chains and identify opportunities for reducing (or sharing) financial costs. Options include (MAF 2007e and 2008a):

- Forestry companies looking at formally partnering with bulk importers, and taking more control of the charter arrangements.
- The use of shared charters, to ensure the vessel is loaded on both legs of the voyage.
- Larger-capacity vessels being utilized, where feasible, to reduce the per-tonne cost of freight. This may require the use of feeder services to hub ports (which would require industry pooling of log volumes).

- Increasing the use of container services (and specially designed log containers) for small or specialized orders.
- Moving along the production chain and producing more highly processed products, so that shipping costs become a smaller proportion of price.

Energy

Impact

The forestry and wood-processing sectors account for around 13 percent of New Zealand's energy consumption, with a number of its processors ranking amongst the country's major energy consumers (MAF 2008a). Pulp, paper and panel production are particularly energy-intensive.

It is estimated that wood residues provide around 50 to 55 percent of the forestry and wood-processing sectors' energy consumption, while electricity provides about one-quarter, and gas, coal and oil provide the rest (BERL 2008).

New Zealand price indices for electricity, gas and petroleum all show significant upward trends since 2003 (MAF 2008a). Figure 22 illustrates the trends from mid-2006 to mid-2008.

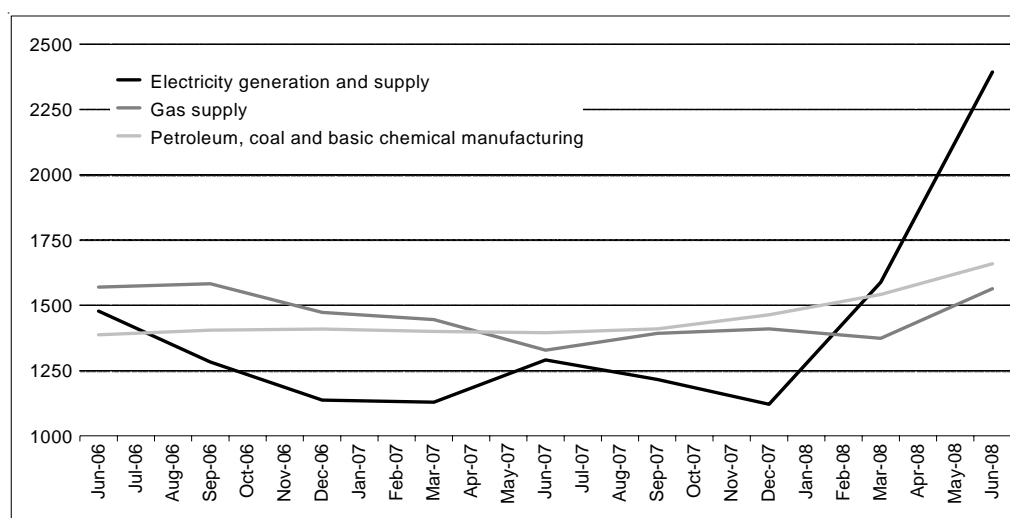


Figure 22. Energy prices. Producer price input indices (December 1997 = 1 000)

Source: Statistics New Zealand (2008b).

While the rate of increase is expected to moderate, energy costs are likely to continue to trend upwards over time (BERL 2008). All other things being equal, the gradient will increase as stationary energy (including coal, gas, geothermal energy and waste fuels) enter the emissions trading scheme in 2010 (see the discussion on legislative constraints below).

However, its impact may be moderated in the first two years under transitional arrangements. Gas prices may increase further as the Maui gas field nears the end of its economic life. Given that gas generation costs often determine the price of electricity, further gas price increases are likely to cause similar increases in electricity prices.

A proposal to tax large users of biofuels, notably pulp and paper mills, for traces of nitrous oxide and methane in their emissions has been criticized as “pedantic” and “perverse” (NZFOA 2008) as it creates a disincentive to move from fossil fuels to biofuels.

Because of their energy intensity, high energy prices could seriously impact the pulp and paper industries. As revealed in the discussion on climate change policies below, the combined impact of an emissions trading scheme plus the proposed tax on biofuels could spell the end of some players.

Potential directions for policy and sector initiatives

The forestry and wood-processing sectors, acutely aware of rising energy prices, have been increasing energy efficiencies and diverting to lower cost sources for some years.

Abstracting from climate change policies, this continued investment, in becoming more energy efficient, means that energy costs are not expected to significantly hamper future investment in the sectors (BERL 2008).

If climate change policies are barely changed then further investment becomes a less likely option in some wood-processing industries and divestment will be probable in others, e.g., pulp and paper. The transitory arrangements merely serve to defer the onset of these impacts.

The discussion on legislative constraints below observes that the recent change in government provides an opportunity to influence the future direction of climate change policies. It suggests some principles that should guide any further contemplation.

Alternative uses of land and values of forest growing

Impact

In recent years, up to one-third of forests harvested have not been replanted and the rate of new planting has declined. Commentators have observed that the land has been converted to farming, particularly dairy farming, enticed by the current relatively more lucrative returns to dairy (see, for example, BERL [2008] and Innovatek [2008b]).

This proposition, however, is not supported by the evidence; at least not as a nationwide phenomenon. Dairy and forestry have a not too dissimilar historic pattern of growth; they do not appear to be in opposition (as evident in the top chart in Figure 23). This is unsurprising as the growth of each will be linked to conditions in domestic and export markets.

An alternative argument is that this is a phenomenon of more recent times, as the land available for use has become physically constrained. The divergent patterns of growth for

dairy and forestry in the latter years captured in the top chart in Figure 23 lend some support to this argument. However, land-use data (as depicted in the bottom chart in Figure 23) weakens it, as the changes have trended in the same directions. Growing trees, which are not intended for harvest for 30 or so years, ‘locks in’ land use for the longer term.

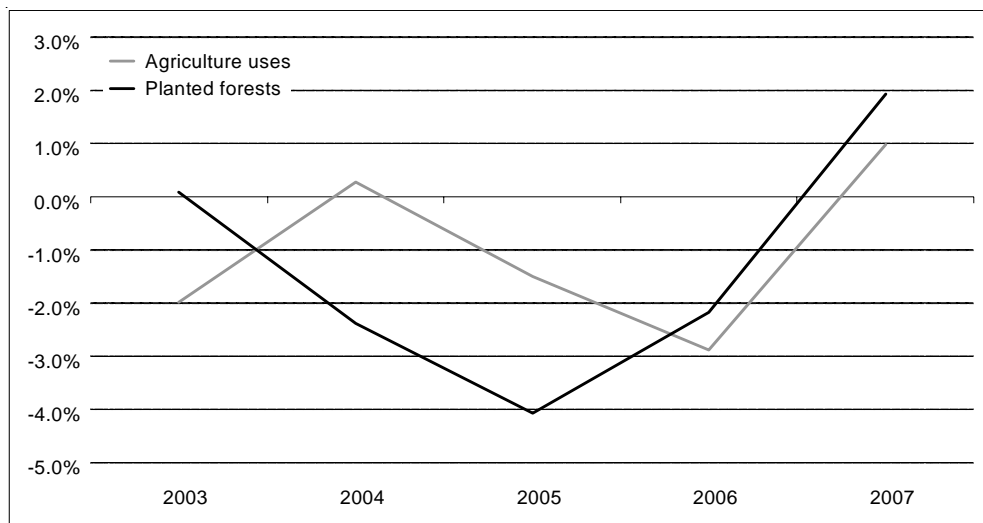
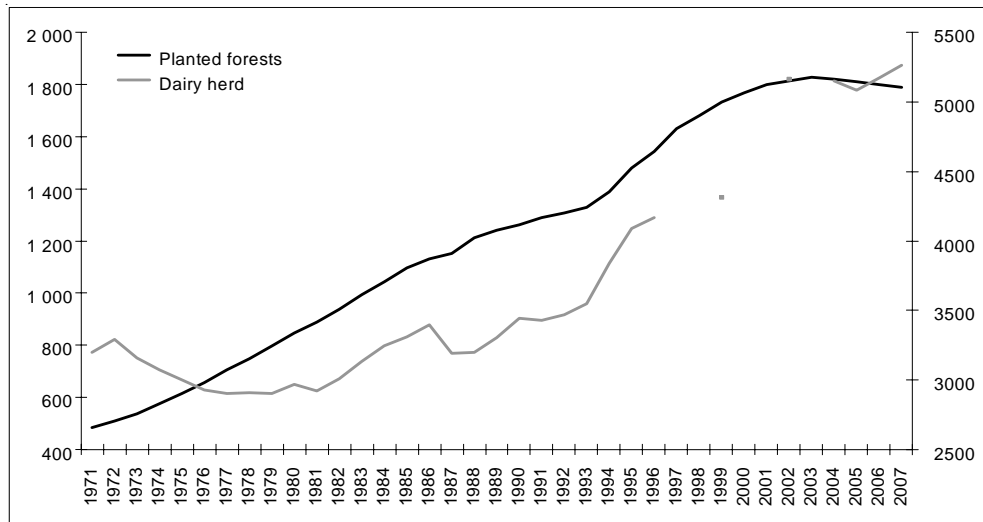


Figure 23. Growth of the planted forestry and dairy sectors (above - 1 000 hectares of planted forest and 1 000 of dairy cattle; below - percent change in use from previous year)

Source: MAF (2008c,f,g).

While doubt can be cast on the competing land-use theories at the national level, at the margin and in certain regions, they hold greater validity. That is, if the trees are approaching an age when their harvest is economic, and where the land is suitable for conversion, then a change is more likely. These preconditions can be found in areas such as the CNI and Canterbury.

So far the discussion has focused on whether land is being converted from forestry to dairy or some alternative agricultural land use based on the *economic* value of the alternatives. However, the debate has, and continues to be, much wider than that, with many arguing that the changed land uses and investment patterns fail to take account of the *full* value of forest growing.

New Zealand communities are increasingly demanding environmental or societal services from planted forests, such as their potential to help sustainably manage land and water resources, conserve habitats and manage biodiversity, mitigate climate change impacts and provide public recreation (see the triple bottom line discussion in the Introduction). Many of these services are non-exclusive: People cannot be excluded from enjoying those services and the true values of the services are, therefore, not recognized financially. The market failures means that the investment in forest growing is less than what the New Zealand community would regard as optimal (MAF 2008a).

Potential directions for policy and sector initiatives

Industry interests have suggested that land-use changes away from planted forestry (see, for example, Innovatek [2008b]) is a policy environment that does not recognize the multiple benefits of forestry to New Zealand.

It may be possible to design market mechanisms that address these failings. The emissions trading scheme (discussed below in the context of the legislative constraints) attempts to do this. Other examples include the East Coast Forestry Project and the Sustainable Land Management Hill Country Erosion Fund, which provides incentives to plant on erosion-prone lands; the Afforestation Grant Scheme, which funds the planting of unforested ('Kyoto-compliant') land; and the proposition for nutrient trading in the Lake Taupo catchment, to encourage low-nutrient land uses, such as forestry (MAF 2008a). These mechanisms provide regular or alternative income streams that transform the economics of forestry and the way people view it as a land-use and investment opportunity.

Comparative advantage

Impact

Just as the physical constraint of land available may (in the circumstances described above) force choices to be made regarding its most profitable use, the investment dollar is also a scarce resource. For a decision to be made to invest in New Zealand's forestry and wood-processing sectors, investors will want to know whether New Zealand:

1. Has a comparative advantage in these sectors ahead of other sectors in the economy; and
2. Is comparatively more efficient at producing forest products than its competitors.

With respect to both aspects, the cost of inputs into the production process is relevant. As the above discussion reveals, the availability and cost of key inputs – labour, shipping and energy – undermines the cost competitiveness of forestry and wood processing. Looking at the latter input, all other things being equal, less energy-intensive investment options will be preferred ahead of wood processing.

The relative productivity of the sectors is also relevant, in particular, their multifactor productivity – how efficiently all inputs are being used to produce outputs. Here the performance of forestry and wood processing over the last 12 years relative to all productive sectors in the New Zealand economy provides further cause for lament. Between 1978 and 1996, multifactor productivity of forestry and logging and wood and paper manufacturing grew at an annual average compound rate of 2.5 percent and 1.7 percent, respectively. This compared favourably to the New Zealand-wide rate of 1 percent, making investment in the sectors a relatively more attractive option. Since 1996, the multifactor productivity of forestry and logging has plummeted to 0.3 percent, and wood and paper manufacturing to a mere 0.1 percent, making it a relatively less attractive investment option given a rate of growth for all sectors of 1.1 percent. Figure 24 illustrates the contrasting performances over time.

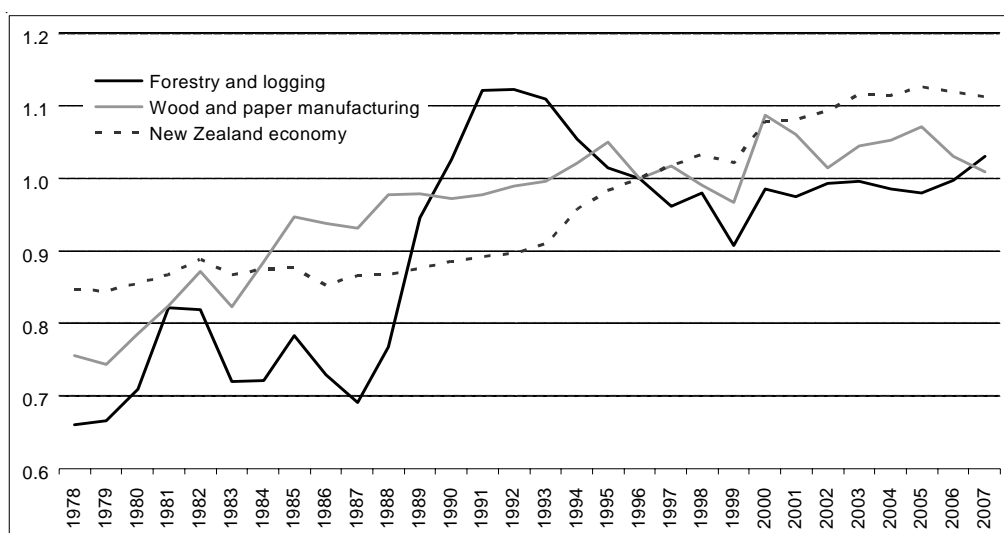


Figure 24. Multifactor productivity (years ending 31 March, index [1996] = 1)

Source: MAF (2008d).

As evidenced in the previous section on demand influences, New Zealand's share of global forest product exports is stagnant to declining. There it was argued that export markets need to be developed beyond the handful of countries that New Zealand currently supplies. Here, the other contributor to these dismal trends is examined – New Zealand's competitiveness in export markets. The New Zealand forestry and wood-processing sectors compete with a number of forest product producers selling into the wood-deficit markets of the US Pacific coast, Southeast Asia and North Asia. Comparative studies show that the New Zealand

forestry and wood-processing sectors cannot compete on price alone with other forest-growing countries, particularly in South America (FIDA 2006). As shown in Table 10, Chile outranks New Zealand in the cost competitiveness stakes for most forest products. All other things being equal, Chile is likely to attract investments in wood processing ahead of New Zealand.

Table 10. Comparative cost competitiveness (rank by product in 2004, 1 = lowest cost, 6 = high cost)

| Product | Destination | NZ | Chile | Australia | China | Japan | Indonesia | US | Malaysia | Canada | Europe |
|--------------------|-------------|------------------|-------------|-----------|-------|-------|-----------|----|----------|--------|--------|
| | | Packaging lumber | Japan/China | 2 | 1 | 3 | 4 | 5 | | | |
| Structural lumber | Australia | 2 | | 1 | | | | | | | |
| Appearance lumber | USA | 2 | 1 | | | | | | | | |
| Moulding | USA | 2 | 1 | | | | | 3 | | | |
| Furniture | USA | 3 | 2 | | 1 | | | | | | |
| Component | China | 3 | 2 | | 1 | | | | | | |
| Sliced/face veneer | Asia | 2 | 1 | | | | | | | | |
| | Europe | 2 | 1 | | | | | | | | |
| | USA | 2 | 1 | | | | | | | | |
| Peeled/core veneer | China | 2 | 1 | 3 | | | | | | | |
| Softwood plywood | Japan | 3 | 1 | 5 | 2 | 6 | 4 | | | | |
| LVL | Japan | 4 | 1 | 5 | 2 | 6 | 3 | | | | |
| MDF | China/Japan | 1 | 3 | 4 | 5 | | | | 2 | | |
| | USA | 3 | 1 | 5 | 6 | | | 2 | 4 | | |
| MDF moulding | USA | 2 | 1 | | | | | 3 | | | |
| Particle board | China | 2 | | 3 | 1 | | | | | | |
| Glulam | Japan | 2 | | 3 | | 5 | | | | 4 | 1 |
| Mechanical pulp | Japan | 1 | 2 | 3 | | | | | | | |

Note: Information in this table is based on world-scale processing plants, implying rankings for New Zealand are optimistic. Source: Jaakko Pöyry (2004).

Potential directions for policy and sector initiatives

In order for New Zealand forestry and wood processing to have a comparative advantage ahead of other investment alternatives, either in other New Zealand sectors or in the same sectors elsewhere, the sectorial and governmental efforts need to be directed towards:

- cutting costs;
- improving productivity; and
- enhancing non-price competitiveness.

Means to the first ends are set out above in the context of discussions on labour, shipping costs and energy.

Regarding the second, the gains in productivity realized over the mid-1980s to mid-1990s were generated from economic reforms that put an end to any protectionism or preferences that sheltered the sectors and saw the government exit its direct involvement in the forestry

sector (see earlier discussion on ownership patterns). The reforms resulted in the re-allocation and better use of resources – the productivity gains.

Now that these efficiency gains have been realized, further gains will only be forthcoming if the sectors become more innovative and make good use of existing and emerging technologies. Process innovations and technology utilization will enable the sectors to do what they currently do more efficiently. Entrepreneurship, R&D and capital deepening (increasing the amount of capital per employee) are key factors. Roles the government can play include:

- Creating an environment that is conducive to and does not stifle entrepreneurship, including reforming regulation that impedes private initiative.
- Ensuring that tax, financial market and monetary policy settings do not inadvertently place barriers in the way of access to capital.
- Investing in public good R&D that complements and crowds in (not out) industry efforts.

The last is not only important to inspiring process innovations, it holds the promise of product innovations that enable the sectors to compete on non-price terms⁶ (FIDA 2006).

Transformative research is often for the public good in nature (Sherwin 2007). The outcomes spill over and benefit the sectors, and are also the foundation for further commercial success. Because it is very hard for individual participants in the forestry and wood-processing sectors to appropriate the benefits, they are unlikely to be realized in the absence of government involvement.

Legislative constraints⁷

Climate change policy

Impact

The Climate Change Response (Emissions Trading) Amendment Act 2008 established an emissions trading scheme (ETS) in New Zealand, with forestry the first sector to be involved. A year later, under a new administration, the New Zealand Parliament passed an act to revise the scheme, providing for a slowed phasing, transitional arrangements and greater alignment with Australia.

The ETS is a price-based mechanism to reduce net greenhouse gas emissions and to ensure New Zealand complies with its Kyoto Protocol obligations. It puts a price on the emission of greenhouse gases and provides incentives to encourage sectors to search for the most

⁶ Non-price competitiveness explains the reasons why a forest product will sell at a higher price than a competing product, and may include quality, image and post sale service.

⁷ Not mentioned here are the Commerce Act, the Overseas Investment Act and Treaty of Waitangi obligations under the law. None of these matters were raised as barriers in either the materials referenced or by persons interviewed. They were consequently judged to be of a lesser order of magnitude than climate change policy and the Resource Management Act.

efficient paths to lower net emissions across the economy. The price of carbon permits, or New Zealand Emission Units (NZUs) will be determined by their trade in the Australasian market.

The scheme is to progressively expand its coverage. The phasing of the introduction of the ETS began with forestry on 1 January 2008. The stationary energy and transport sectors are to be included in 2010. Coverage will be completed with the inclusion of agriculture on 1 January 2015, at which time all sectors of the economy will be included. The deferred inclusion of agriculture is a sore point with the forestry sector (see, for example, NZFOA 2007), which has the potential to exacerbate the land-use changes from forest growing, to dairy and other agricultural uses (as discussed above).

The ETS is expected to have a differential impact on investment in forest growing and wood processing. For the former, the direct impact is largely, but not exclusively, positive. For the latter, it will be negative, with consequent indirect adverse impacts for forest growing, as local demand for wood may weaken.

Impact on forestry growing and harvesting

Economic analysis suggests that even at relatively low carbon prices, participation in the ETS would have a positive effect on internal rates of return for owners of forests planted post-Kyoto (1990), and at high carbon prices the effects would be significant (Clarke and James 2001; MAF 2008a). This is because NZUs are earned as the forests grow. They, however, will need to be surrendered when the trees are harvested.

For forests planted pre-Kyoto, their harvesting is likely to incur a large liability – NZ\$14.4 billion, assuming 800 tonnes/hectare, NZ\$15/tonne CO₂ and 1.2 million hectares (NZFOA 2007). This arises because few commensurate NZUs will have been earned prior to their harvest.

To avoid this liability a number of forest owners chose to harvest their trees early ahead of the ETS coming into effect (MAF 2008d). The volume of logs harvested from New Zealand forests increased by 4.4 percent for the year ending 31 December 2007. Early harvesting is not, however, a cost-free option. It means forfeiting the returns that would have otherwise been expected from waiting for the financially optimal harvest age had the ETS not been introduced, and any supply-induced fall in log prices (Clarke and James 2001).

In recognition of the liability the ETS imposes on pre-Kyoto forest owners, the government had been planning to provide the owners compensation, with the bulk of this to be paid post-2012. It has now been signalled that the government might not pay this if the international agreement that replaces Kyoto allows for harvested pre-Kyoto forests to be ‘offset’ – that is, replanted on a new site. Forest owner representatives have voiced concern that this compounds the injustice as forest owners would have to finance the re-establishment of forest infrastructure on a new site, while the forested site would still have a permanent deforestation liability attached to it (NZFOA 2009).

For those forests still to be harvested, forest owners will choose to harvest their forests only if the expected return from the sale of logs outweighs the cost of buying NZUs for deforestation. Trees may be harvested at more mature ages than has been recent practice (in

order to maximize earnings from NZUs), or not altogether (Clarke and James 2001). The supply of wood to local processors may be adversely impacted.

Impact on wood processing

The potential for wood supply to be less than previously expected is just one of a number of ways the New Zealand wood-processing sector is likely to be adversely impacted by the ETS. The primary economic impact will be felt through higher prices for a number of important inputs, namely the cost of (Castalia 2008):

- electricity for driving saws, chippers, grinding and conveying;
- gas, coal and geothermal energy for process heating; and
- transport of logs from forest to mill, and of finished products from mills to ports or domestic outlets.

The sector's greatest exposure to cost increases under the climate change policy is through increases in energy prices and costs, including biofuel costs and transport costs. Castalia (2008) has estimated that the climate change policy will raise costs across the whole sector by between NZ\$629 and NZ\$702 million, based on a carbon price range of NZ\$20 to NZ\$50 per tonne of carbon.

Given the likely impact of the ETS, Castalia (2008) finds that mechanical pulp mills will be induced to close prematurely, stranding their assets. As their electricity consumption is very high, their operating costs would exceed the revenues. Divestment, rather than investment, will be the pattern of the future.

The closure of the mechanical pulp mills will have a flow on impact to sawmills, by reducing the prices for wood chips, which are a significant by-product of sawmilling and serve as input into the pulp mills.

Analysis by Castalia (2008) suggests that the operating surpluses of sawmillers and other wood processors (of panels, chemical pulp and paper) are generally adequate to accommodate some increases in costs from the ETS. However, profitability will be lower, the values of the plants to their owners will be reduced and, in some cases, the write-down in asset values associated with lower operating surpluses could affect lending covenants, and increase the borrowing costs of the industry. Castalia (2008) concludes that new investment in wood processing in New Zealand appears unlikely. Overseas investment alternatives are likely to be preferred and the projected increase in wood production over the next two decades is more likely to be exported as logs.

Potential directions for policy and sector initiatives

The 2009 amendments of New Zealand's ETS have improved conditions for forestry and processing by:

- compensating for liabilities arising from decisions taken before the Kyoto Protocol was signed, such as new forest plantings;

- introducing transitional arrangements, such as allocating a share of NZUs to industry for free (see Castalia 2008 for further discussion on this specific policy option); and
- making greater use of incentives, such as reducing liabilities arising if trees harvested are replanted (see NZFOA 2007 for further discussion on this specific policy option).

As the above discussion indicates, there continues to be room for further improvements, including:

- adopting a level playing field approach to competing land uses;
- reviewing the compensation still due to the owners of preKyoto forests; and
- reviewing the proposal to tax the greenhouse gas emissions of biofuels.

The proposed 2011 review of the ETS provides an opportunity to develop new policies that will further these ends.

Resource Management Act

Impact

The Resource Management Act 1991 (RMA) provides a basis for environmental management, including air, water, soil, biodiversity, the coastal environment, noise, subdivision and general land-use planning. The RMA requires that every district council prepare a district plan and every regional council prepare a regional policy statement and, if necessary, regional plans. Regional policy statements establish a framework for resource management issues in a region, and facilitate an integrated approach among district councils in managing those issues. More detailed district plans set out significant resource management issues in each district and establish objectives, policies and methods to address these issues. District plans typically cover issues relating to land-use impacts, the effects of activities on rivers and lakes, and noise. Regional plans are typically developed to regulate discharges of contaminants, water quality and quantity, coastal marine areas and soil conservation.

Each region or district/city has its own resource management issues and establishes a plan to regulate activities that may impact on the environment. Councils classify activities according to perceived potential impacts. Where activities are classified as controlled activities, discretionary activities, restricted or limited discretionary activities, or non-complying activities, a resource consent must be obtained before the activity can be undertaken. Additionally, some activities may be prohibited.

The overarching legislation and intent of the RMA are generally regarded by the forestry and wood-processing sectors and others to be good. However, major problems in how it is implemented have led many to regard it to be the single biggest obstacle to the development of processing investment in New Zealand (Brown and Ortiz 2001). While this can be discounted as perception, the anecdotal experiences of some companies have created a climate where potential investors view RMA processes as a significant cost and risk. Their criticisms of the RMA are many and include the following:

- Restrictions on the availability of land for planting, such as landscape and amenity restrictions on mid- and higher altitude plantings (MAF 2007e), and on planting and harvesting forests near rivers with riparian zones and coastal marine areas (MAF 2006).
- Limited availability of suitably zoned land for Greenfield investments (MAF 2007e).
- Costs of obtaining a resource consent, including the time and cost of consulting, attending hearings and potentially seeking legal advice (Brown and Ortiz 2001; MAF 2006).
- High compliance costs (Brown and Ortiz 2001) including the sometimes prohibitive costs of meeting high standards, such as the cost of meeting air quality standards, which may not be supported by adequate science.
- Lack of consistency between councils (Brown and Ortiz 2001).
- Significant degrees of uncertainty and risk, posing too high a hurdle for many Greenfield investments and a preference for Brownfield expansions (Brown and Ortiz 2001; MAF 2006; MAF 2007c).
- Objection processes that create the potential for vexatious and often anti-trade objections (Brown and Ortiz 2001; National 2008b).

Potential directions for policy and sector initiatives

Reform of the RMA is being carried out in two phases. The first phase was delivered by the passing of amendments to the RMA in October 2009. The primary intention of these changes was to reduce the costs and improve the timeliness of RMA processes. It was also designed to streamline consenting processes for priority projects, and to manage anticompetitive behaviours under the RMA. In other words, the amendments tackle many of the longstanding concerns of the forestry and wood-processing sectors regarding the RMA's operation.

The objective of the second phase of reform is to achieve the least cost delivery of good environmental outcomes. The reform package touches on a number of resource management areas that are not only relevant to the RMA, but cover these areas more broadly.

The proposed reforms create a window of opportunity for forestry and wood-processing sectoral interests to influence the future of resource management in New Zealand.

Conclusion

New Zealand's forestry and wood-processing sectors are of considerable benefit to the country's economy, environment and society. If, however, current trends are allowed to extend into the future, the potential for the sectors to enhance their triple bottom line contribution will not be realized. The rate of planting and replanting has declined, and the available wood resource is not being fully utilized.

The optimal contribution from forestry and in wood processing requires investment – investment in forest growing and management and in processing facilities. As the majority of New Zealand's planted forests have not been in government hands for some time now, this investment must be financed by private sector interests. The role of the government is to create the enabling environment that facilitates private initiative.

This paper has identified the demand-side influences, supply-side considerations and legislative constraints that impact the enabling environment. It proposes action for sectoral interests and the government. The recommendations below isolate the proposed courses of action.

Recommendations

| | Potential directions for sector initiatives | Potential policy directions Demand-side influences |
|---|---|---|
| <i>Exchange rate:</i> The fluctuating exchange rate is particularly deleterious given the long-term nature of investments in forest growing and wood processing. | <ul style="list-style-type: none"> ■ Forest products are sold in a wider range of markets. ■ Greater value is added within New Zealand before exporting final products. | <ul style="list-style-type: none"> ■ Promote New Zealand and its products in overseas markets (refer <i>Market development</i>). ■ Address the barriers to market access (refer <i>Market access</i>). ■ Support research and development. ■ Review approach to monetary policy and the impact its operation has on the 'real' sector of the economy. |
| <i>Housing slump:</i> Housing demand slumped in the domestic and several key forest product export markets in the wake of the global financial crisis, impacting the demand for both timber and panel products. | <ul style="list-style-type: none"> ■ Build the resilience of the sectors. ■ (Refer also <i>Market development</i>). | |
| <i>Market development:</i> The narrow range of markets New Zealand's forest products are sold into has contributed to a low to declining global market share and vulnerability to market conditions. | <ul style="list-style-type: none"> ■ Seek to develop existing and new export markets, notably through initiatives identified in the context of the Forest and Wood Products Industry Strategic Plan. ■ (Refer also <i>Comparative advantage</i>). | <ul style="list-style-type: none"> ■ Assist the sectors' efforts through initiatives that complement and crowd in (not out) individual and collective action. |
| <i>Certification:</i> Customers are increasingly requiring that forest products are from sustainable forests. | <ul style="list-style-type: none"> ■ Evidence that logs are from sustainable forests by obtaining FSC certification. | |
| <i>Market access:</i> As tariff barriers have become less of a constraint on trade, non-tariff measures have increased and are now prolific in the forest product trade. | <ul style="list-style-type: none"> ■ Trade officials and representative organizations from the forestry and wood-processing sector to continue to work together to minimize non-tariff measures. | |

Supply-side considerations

| | |
|---|---|
| <p><i>Labour:</i> The trend towards fewer persons being engaged in forestry and wood processing needs to turn around if the increasing volumes of wood becoming available are to be harvested and processed domestically.</p> | <p>The Forest Industries Training and Education Council undertake initiatives to:</p> <ul style="list-style-type: none"> ■ Lift the profile of the forestry and wood-processing sectors and promoting careers within those sectors. ■ Future plan to identify and address skill requirements and gaps within the sectors. |
| <p><i>Shipping:</i> New Zealand's geographic location means that, unless ways to economize on shipping costs are found, the Asia-Pacific region will remain the focus of New Zealand forest product exports.</p> | <ul style="list-style-type: none"> ■ Exporters look closely at their supply chains and identify opportunities for reducing (or sharing) financial costs. |
| <p><i>Energy:</i> Because of their energy intensity, high prices for electricity and gas could seriously impact pulp and paper producers.</p> | <p>(Refer <i>Climate change policy</i>)</p> |
| <p><i>Alternative uses of land and values of forest growing:</i> Changed land uses and investment patterns fail to take account of the full – triple bottom line – value of forest growing.</p> | <ul style="list-style-type: none"> ■ The multiple benefits of forestry explicitly influence the design of market mechanisms to address any failings, such as the emissions trading scheme (refer <i>Climate change policy</i>). |
| <p><i>Comparative advantage:</i> The availability and cost of key inputs (refer <i>Labour, shipping and energy</i>) undermines the cost competitiveness of forestry and wood processing, and the ability of the sectors to successfully compete with other producers of low value forest products. Forestry and wood processing are relatively and increasingly less productive than the average for all productive sectors of the New Zealand economy.</p> | <ul style="list-style-type: none"> ■ Cut costs (refer e.g., <i>Shipping</i>). ■ Improve productivity through entrepreneurship, R&D and capital deepening. ■ Create an environment that is conducive to and does not stifle entrepreneurship, including reforming regulations that impede private initiative. ■ Ensure tax, financial market and monetary policy settings do not inadvertently place barriers in the way of access to capital. ■ Invest in public good R&D that complements and crowds in (not out) industry efforts. |

Legislative constraints

Climate change policy:
The emissions trading scheme is expected to benefit forest growing and negatively impact wood processing.

- Adopt a level playing field approach to competing land uses.
 - Review the compensation still due to the owners of pre-Kyoto forests.
 - Review the proposal to tax the greenhouse gas emissions of biofuels.
-

Resource Management Act: Implementation has caused many to regard it as the single biggest obstacle to investment in wood processing.

- Advance to the second phase of the government's proposed resource management reforms.
-

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Creating space for private sector financing: Removing constraints to investments in the Philippines

Florentino O. Tesoro¹ and Leonardo D. Angeles²

Introduction

The Government of the Philippines continues to play a dominant and central role in forest management, wood processing and trade through its policy issuances and regulatory controls. This role is based on the inherent powers of the state to control and supervise the exploration, development and utilization of all public lands, including forest lands or timberlands, and their natural resources (Philippine Constitution 1987).³ It also regulates all industries, including the wood-based industry (EO Nos. 192 & 292 1987).

Although the state recognizes the indispensable role of the private sector, encourages private enterprise and provides incentives to needed investments (Philippine Constitution 1987), the private sector continues to be reluctant to invest in forestry enterprises (natural forest management, plantation forest development and/or wood processing and marketing), as it is constrained by the prevailing unfriendly business environment. Some of the key reasons for this (which will be explored in more detail in the study) include:

- Outdated, unstable and poorly implemented policies on forest resources and forest-based industries;
- Heavy regulations that are changed frequently and uncoordinated with other government agencies and stakeholders of the forestry sector;
- Lack of a vision-oriented, workable, financially-supported and time-bound roadmap for the sustainable development of the forestry sector;
- Time-consuming, requirement-demanding and transaction-costly licensing and permit systems in practically every step of business operations;
- Poor and inadequate infrastructure, such as roads, bridges, power and telecommunication systems;
- The perception of financial institutions being opposed to forestry businesses, which are perceived as having long gestation, low return and high risk;
- Meager incentives for investment in the forestry sector; and
- Negative public perception that forestry is an irresponsible and unsustainable use of natural resources.

In general, the macroeconomic fundamentals of the Philippines are sound, allowing the country to have survived the 1997 regional and the current global financial crises much better than its neighbours. What is needed for the forestry sector to regain its high economic status

¹ A professional forester who has worked with academic institutions (education and research) and is the former Undersecretary for Regional Operations, Department of Science and Technology (DOST).

² A professional forester who has worked with the private sector for more than 20 years and is currently Executive Director of the Philippine Wood Producers' Association (PWPA).

³ The Philippine Constitutions of 1935 and 1978 are likewise enshrined with this Regalian doctrine.

of the 1950s-1980s is a paradigm shift in government philosophy towards investment in the sector. Half the total land area of the country is a potentially rich forest asset with a favourable climate for growing trees, a huge rural population needing jobs and sources of livelihood, local and global markets in perpetual need of wood, and an historical benchmark of good forestry sector performance. Thus, the removal of the barriers to forestry investments is the necessary intervention to re-invent the forestry sector.

This study attempts to review and identify key constraints, as perceived by private sector investors, and to recommend measures for their removal through reforms by the government, with the end-view of improving the investment climate in the forestry sector.

Patterns of resource ownership

Forest lands

Forest lands, like national parks, agricultural and mineral lands, are in the public domain, and their natural resources such as forests are owned by the state (Philippine Constitution 1987). The Constitution further provides that, except for agricultural lands, they shall not be alienated nor titled and their exploration, disposition, development and utilization may be done by the state itself, or it may enter into co-production, joint venture, or production-sharing agreements with Filipino citizens or corporations or associations, at least 60 percent of whose capital is owned by them; this may be done for a period not exceeding 25 years, renewable for not more than 25 years under such terms and conditions as may be provided by law.

Under the government's land classification system, in 2005, the Philippines' total land area (30 million hectares) was almost equally classified into forest lands and disposable or agricultural lands at 15.8 million hectares and 14.2 million hectares, respectively. Forest reserves, timberlands, national parks and military, naval and civil reservations, as well as fishponds and the remaining unclassified public lands, are components of forest lands.

However, Republic Act (RA) No. 8371, otherwise known as the Indigenous Peoples Rights Act (IPRA) of 1997 (RA No. 8371, 1997), affirmed as constitutionally valid by the Supreme Court of the Philippines (G.R. No. 135385 2000), converted all lands legitimately claimed by indigenous peoples (IPs) or indigenous cultural communities (ICCs) as their ancestral lands and/or ancestral domains into private alienable and disposable (A&D) or agricultural lands with so-called Native Titles.

As of August 2007, 57 Certificates of Ancestral Domain Titles (CADTs) and 172 Certificates of Ancestral Land Titles (CALTs) had been approved, covering 1.1 million hectares and 4.9 million hectares, respectively, or close to 6.0 million hectares that were part of the 15.8 million hectares of forest lands; they have now become part of the A&D lands (Table 1).

Table 1. Changes in land classification resulting from IPRA implementation (million hectares); A&D lands – private alienable and disposable lands

| | Prior to IPRA | As at August 2007 |
|-------------------------------|---------------|-------------------|
| A&D lands | 14.2 | 20.2 |
| Forest lands | 15.8 | 9.8 |
| Total area of the Philippines | 30.0 | 30.0 |

The allocation of forest lands is done by the state through Congress, the Office of the President, the Department of Environment and Natural Resources (DENR) or the National Commission on Indigenous Peoples (NCIP).

Congress is enjoined by the Constitution to: a) set the final boundaries of forest lands (only by government acts can these established boundaries be modified); b) prescribe the modes of access to, size of the area and conditions of forest land grants; and c) enact sustainable forest land-use policies, including the declaration of a logging ban.

The President of the Republic of the Philippines may promulgate executive orders (EO) to carry out acts of public interest the government wants to pursue; for example, EO No. 263 of 1995 (Implementing the Community-based Forest Management) and EO No. 318 of 2004 (Implementing Sustainable Forest Management), as well as presidential proclamations to establish watershed, civil/military reservations, etc.

The Secretary of the DENR may allocate forest lands by granting various types of tenure instruments conforming with either joint ventures, co-production, or production-sharing agreements, as well as with stewardship contracts prescribed by the Constitution.

These tenure instruments include: a) integrated forest management agreements (IFMAs) for corporations; b) socialized integrated forest management agreements (SIFMAs) for family or smallfarmer stakeholders; c) community-based forest management agreements (CBFMAs) for organized communities who are dependent on the forests for their livelihoods; and d) others such as tree farm lease agreements (TFLAs), agroforest farm lease agreements (AFFLAs), pulpwood timber licence agreements (PTLAs) and forest land grazing management agreements (FLGMAs). These are all production-sharing agreements. The timber licence agreements (TLAs) are being phased-out as they do not conform to the constitutional prescription of agreements (the last of the TLAs will expire in 2011).

In cases where the areas applied for happened to be partly or wholly inside ancestral domains, the grant of free and prior informed consent (FPIC) by the IPs or ICCs is a condition for the award of the tenure instruments over the area. Moreover, before a tenure instrument can be granted by the DENR it must first obtain certification from the NCIP that no portion of the area granted is within claims of IPs/ICCs.

Finally, the chairperson of the NCIP, as authorized by the consensus decision of its commissioners, may issue CADTs or CALTs.

Table 2 shows the allocation of forest lands, including the parts now under CADTs and CALTs or native-titled agricultural lands.

Table 2. Allocation of forest lands (1 000 hectares)

| Tenure | Area | Tenure-exempt/free | Area |
|--|--------------|--|--------------|
| Ancestral Domain/Ancestral Land (CADT/CALT) [†] | 5 977 | National parks | 1 342 |
| Timber (TLA) | 779 | Military/naval reservation | 126 |
| Pulpwood (PTLA) | 46 | Civil reservation | 166 |
| Integrated Forest Management (IFMA/ITPLA) | 714 | Watershed reserves | 1 499 |
| Tree Farm (TFLA) | 17 | Fishpond | 91 |
| Agroforestry (AFFLA) | 90 | Untenured forest reserves and timberland | 2 429 |
| Socialized IFM (SIFMA) | 40 | | |
| Forest Land Grazing (FLGMA) | 109 | Unclassified | 753 |
| Community-Based Forest Management (CBFMA) | 1 622 | | |
| Total | 9 394 | Total | 6 406 |

[†]In erstwhile forest lands, now in ‘native-titled’ agricultural lands.

Source: DENR (2005a).

Holders of tenure instruments are directly responsible and accountable for the protection, development and management of the forest lands and their resources. However, the obligations of the tenure holder and the state, including their respective ‘equities’ and the sharing of profits or benefits are generally prescribed in the general guidelines; the specifics being inked in every agreement or contract.

Forests

The Supreme Court of the Philippines’ affirmation of the validity of CADTs and CALTs as private lands did not include ownership of the natural resources such as natural forest by the IPs or ICCs; they remain owned by the state as assets found in titled or non-titled privately owned and A&D lands, such as those contained in the 20 000-hectare Spanish-titled private land between the provinces of Aurora and Quezon in northeastern Luzon.

Plantation forests, established in forest lands by holders of licence agreements under mandatory reforestation⁴, are owned by the state. However, plantation forests established in forest lands by holders of licence agreements that are not in satisfaction of mandatory reforestation or plantations in private or A&D lands by the owners themselves belong to such holders or owners under the pertinent provisions of Presidential Decree (PD) No. 705 (PD No. 705 1975), as amended and elaborated under DAO No. 99-53 (DENR 1999a).

⁴ Holders of permits and agreements are mandated to reforest areas of the natural forest that are subjected to harvesting.

Based on the forest assessment of the country undertaken in 2003, the forest areas found in A&D lands are shown in Table 3.

Table 3. Forest cover by categories 2003 (1 000 hectares)

| | Forest area in forest land | % to total land area | Forest area in A&D lands | % to total land area | Total forest cover | % of total land area |
|---------------|----------------------------|----------------------|--------------------------|----------------------|--------------------|----------------------|
| Total | 6 521.5 | 22.1 | 646.9 | 2.2 | 7 168.4 | 23.9 |
| Closed forest | 2 495.8 | 8.5 | 65.0 | 0.2 | 2 560.9 | 8.5 |
| Open forest | 3 578.5 | 12.1 | 452.1 | 1.5 | 4 030.6 | 13.4 |
| Mangrove | 165.4 | 0.6 | 81.9 | 0.3 | 247.4 | 0.8 |
| Plantation | 281.8 | 0.6 | 47.8 | 0.2 | 329.6 | 1.1 |

Source: DENR (2003a).

Under the provisions of IPRA, “individually owned ancestral lands, which are agricultural in character and actually used for agricultural, residential, pasture, and tree farming purposes, including those with a slope of eighteen percent (18%) or more, are hereby classified as alienable and disposable agricultural lands.” As indicated earlier, as of August 2007, about 5.98 million hectares of forest lands have been issued CADT/CALT titles (NCIP 2007). It is not known how much of the forest cover is included in them.⁵

In addition to privately-owned natural forests there are tree plantations established/ developed by the non-government sector. From 2000 to 2005, the area of plantations developed was reported to be 34 857 hectares, of which 3 482 hectares were on private lands (Table 4). It appears from Table 4 that the number of plantations developed by the non-government sector is increasing and there was a significant increase in the plantations developed in private lands in 2005 because of the high demand for logs and wood by industries.

Table 4. Area reforested by the non-government sector (hectares)

| Year | Total | TLA | IFMA | SIFMA | TFLA/ AFFLA | Private lands | CBFMA | Other |
|---------------|---------------|--------------|---------------|--------------|--------------|---------------|------------|--------------|
| 2005 | 9 311 | 341 | 5 973 | 263 | 101 | 2 633 | - | - |
| 2004 | 7 902 | 2 836 | 2 877 | 204 | 1 350 | 205 | - | 430 |
| 2003 | 1 893 | 842 | 924 | - | 110 | 17 | - | - |
| 2002 | 4 939 | 564 | 1 678 | 1 790 | 264 | 101 | 52 | 490 |
| 2001 | 4 920 | 1 410 | 1 431 | 997 | 139 | 320 | 103 | 520 |
| 2000 | 5 892 | 1 989 | 2 142 | 560 | 94 | 206 | 429 | 472 |
| TotMal | 34 857 | 7 982 | 15 025 | 3 814 | 2 058 | 3 482 | 584 | 1 912 |

Source: DENR (2005a).

⁵ Data provided by the NCIP, 20 September, 2007.

Wood-based processing industries

The number of processing plants reported in 2005 (DENR 2005a) is shown in Table 5. There were 30 operating sawmills, 22 veneer mills and 32 plywood mills. There has been an enormous reduction in the number of operating sawmills since 1980 when the country still had about 12.46 million hectares of forest cover, of which 10.7 million hectares were productive forest (DENR 1980). With the reduction in forest cover there was a corresponding decrease in the number of sawmills. However, the number of veneer and plywood mills remained more or less constant. This is because the country started to import veneer logs and veneer in the 1990s to process into plywood.

Table 5. Number of wood-processing plants

| Year | Sawmill | Veneer | Plywood |
|------|---------|--------|---------|
| 2005 | 30 | 22 | 32 |
| 2004 | 36 | 20 | 32 |
| 2003 | 31 | 18 | 32 |
| 2002 | 36 | 16 | 34 |
| 2001 | 44 | 19 | 30 |
| 2000 | 45 | 19 | 27 |
| 1995 | 78 | 6 | 31 |
| 1990 | 152 | 15 | 45 |
| 1985 | 174 | 7 | 38 |
| 1980 | 209 | 23 | 33 |

Source: DENR (2005a).

In the furniture subsector there were approximately 15 000 furniture factories in 2001.⁶ They were mostly found in three major areas, namely, Cebu City, Pampanga Province and Metro Manila. The furniture manufacturers utilize a combination of wood, rattan, bamboo and other materials in the production of furniture. The other subsector that makes use of forest-based raw materials is the handicraft industry. In 2001, there were an estimated 10 600⁷ establishments nationwide. The majority are micro to medium enterprises which are mostly family-owned and family-operated.

The investment climate

Stern (2002) defines investment climate as the “policy, institutional, and behavioral environment, both present and expected, that influence the returns and risks associated with investment”. Pernia and Maligalig⁸ stated that there are three broad sets of factors that constitute an investment climate, namely: 1) macroeconomic fundamentals; 2) infrastructure; and 3) governance and institutions. Macroeconomic fundamentals include macroeconomic stability (e.g., reasonable fiscal and external balances, exchange rate,

⁶ Roberto Natividad, Division Chief, Forest Products Research and Development Institute, personal communication.

⁷ Roberto Natividad, op cit.

⁸ Pernia and Maligalig (undated).

inflation rate and interest rates), competitive markets, social and political stability. Infrastructure includes availability and quality of physical infrastructures such as roads, ports, telecommunication, power and water supply. Governance and institutions include transparency and efficiency in regulation, taxation, the legal system, a strong financial sector, labour market flexibility and quality of labour force. Resource security, clarity of ownership and access rights should also be included under governance and institutions.

Macroeconomic fundamentals

Fiscal and external balances and FDI: In 2007, the Philippines was ranked as the 37th largest economy by the International Monetary Fund (IMF) according to purchasing power parity. It posted a growth rate of 7.3 percent that year, comparable to that of India.⁹ Important sectors of the economy include agriculture (including fisheries and forestry), industry and services. The industrial sector includes food processing, textiles and garments, electronics and automobile parts. Recent gas discoveries in Palawan add substantially to the country's hydropower, geothermal and coal energy reserves.

The economy, however, is weighed down by government debt. The Department of Finance (DOF) announced that the public sector debt as of the end of September 2007 stood at PhP4.9 trillion (US\$98 billion). This is equivalent to about 83.4 percent of the GDP. This is lower than the 87.7 percent ratio at the end of June in 2006 (Samonte 2008). Interest payment alone in 2007 was PhP58.7 billion, not counting the payment of the principal (Samonte 2007). With a better financial position, the funds that went into debt payment would have gone into priming the economy such as infrastructure, education, research and assistance to industries.

The Philippines has been trying to enhance its financial position by improving tax collection and restraining its expenditures, thus reducing its budget deficit. To improve tax collection the government has resorted to strengthening tax administration by rewarding tax collectors who meet prescribed performance targets and penalizing or re-assigning those that fail. The government has also adopted an approach of 'no audit' for taxpayers who paid 20 percent higher than the previous year to encourage payment of higher taxes (Institute of International Finance 2005). A package of new tax measures known as the Value Added Tax (VAT) scheme, which was expected to raise additional revenues, was passed in mid-2005 (RA No. 9337 2005).

As a result of these efforts the government was able to end 2007 with a budget deficit way below its PhP80 billion ceiling. The improved strength of the peso in 2007 and early 2008 has helped reduce significant amounts in public sector US dollar-denominated debt. In addition, the remittances of overseas Filipino workers (OFW) have bolstered the peso (Samonte 2008).

The amount of foreign direct investment (FDI) that a country obtains is a reflection of the confidence of investors, notwithstanding the special relationship that one country may have with the investor countries. Table 6 shows the amount of FDI received by the Philippines in the past ten years.

⁹James Hookway, Wall Street Journal, 31 August 2007, Page A-1.

Table 6. FDI in the Philippines, 1998-2007

| Year | Amount (US\$ billion) |
|-------------------|-----------------------|
| 1998 | 2.200 |
| 1999 | 1.700 |
| 2000 | 1.300 |
| 2001 | 0.982 |
| 2002 | 1.700 |
| 2003 | 0.318 |
| 2004 [†] | 0.330 |
| 2005 | 1.854 |
| 2006 | 2.921 |
| 2007 | 2.928 |

[†]Up to September 2004.

Source: Central Bank of the Philippines (2008).

A major reason for the low investments in 2002 to 2004 was the slowdown in the United States' economy and in other parts of the world (USDA 2005). Increased competition from the People's Republic of China (PRC) reduced demand for Philippine export products, resulting in decreased new investments and re-investments in the export manufacturing sector (USDA 2005).

Another reason that dampened investments is the Foreign Investment Negative Lists. These are lists of investment areas where foreign investments are restricted such as in manufacture, repair, storage and distribution of firearms and ammunition, manufacture and distribution of dangerous drugs, all forms of gambling, nightclubs, massage parlours and other activities regulated by law because they impose health hazards; also, small and medium domestic enterprises with capital investments of less than US\$500 000 and services requiring a licence and continuing regulation by the national government. Furthermore, foreign investors can own not more than 40 percent of a company and the rest is owned by Filipinos. Many investors feel that the list and the cap in foreign investors' ownership are too restrictive to foreign participation in various endeavours.

The FDI has slightly improved in the last four years – US\$0.330 billion in 2004 to US\$2.928 billion in 2007. This could be due to a perceived improvement of the economy.

Exchange rates: For several years after the Asian economic crisis in 1997, the exchange rate of the peso to the US dollar was above PhP50. Owing to the depreciation of the value of the US dollar since late 2007 the value of the peso to the dollar has been between PhP44 to 45. This has greatly affected the exports of the country because it would take more dollars to buy the same amount of goods formerly bought before the depreciation of the US dollar. About 70 percent of the value of Philippine furniture exports goes to the United States (DENR 2005a). On the other hand, it takes fewer pesos to import raw materials than previously.

With respect to logs, there is little impact by the exchange rate because the Philippines has not been exporting substantial amounts of logs. Lumber and plywood exports have been affected somewhat.

Inflation rates: The General Wholesale Price Index in the Philippines increased to 10.4 percent in March 2008 from 8.6 percent in February 2008. In March 2007, the inflation rate was only 2.6 percent. The National Statistics Office reported that in August 2008, the inflation rate climbed to 12.5 percent, the fastest pace in the last 17 years. This has brought the average inflation rate for the first eight months of 2008 to 8.8 percent (The Philippine Star 2008). However, forest-based industries do not consider the increase in inflation rate as threatening because the growing of trees takes several years. Similarly, in the wood-processing sector it is not considered a threat either because once the equipment has been purchased, installed and in operation it is no longer affected by inflation. What are subjected to the impact of inflation are the logs and other inputs in the production of wood products such as plywood and other composite boards. The cost of power is also affected by inflation simply as a translation of the increasing cost of fuel.

When inflation rises to a certain level the government can institute corrective measures such as an increase in interest rates. Furthermore, the remittances of OFW, which in 2008 are expected to surpass the US\$14.45 billion remittances in 2007, have been keeping inflation in check. By September 2008 remittances were reported to be US\$12.27 billion.¹⁰

Interest rates: The average banks' interest rates were around 6.92 to 10.11 percent from January to October 2008 and the Central Bank has not seen any reason to change its overnight lending rates. However, even at this rate the private investors consider the interest rate rather high.

Social and political stability: The political situation in the country is rather unpredictable because of attempts to overthrow the government that were unsuccessful due to lack of public support. Recently, a fourth impeachment complaint has been submitted to the House of Representatives seeking the impeachment of the President because of perceived corruption and fraud in the 2004 presidential election. However, the impeachment complaint was voted out by the House Committee on Justice (the committee that determines whether there is validity in complaints) because of lack of substance (Pelovello 2008).

However, there is armed conflict in Mindanao, particularly with armed Muslim organizations such as the Moro Islamic Liberation Front and the Moro National Liberation Front which allegedly are fighting for their ancestral rights to their land. There are also armed groups in Muslim Mindanao which have been engaged in banditry such as kidnapping for ransom. This peace and order situation in Mindanao has dampened interest to invest in the country, particularly in the southern parts of the Philippines.

Competitive markets: The export of lumber from the Philippines has decreased tremendously since 1990 and can be traced to the commensurate decrease in lumber production due to the declining log supply. In the case of veneer, production increased from 1990 to 2004, but declined slightly in 2005. However, the export of veneer has remained more or less constant since 1999 to 2005. For plywood, production increased up to 2004 from 1998, but also dipped slightly in 2005. The export of plywood decreased after 1994 with some signs of improvement in 2002 to 2004, but again decreased in 2005. For forest-based furniture, the value of exports from 1996 to 2005 does not show a significant trend (DENR 2005a).

¹⁰ Data based on reports of banks to the Central Bank: <http://www.bsp.gov.ph/statistics/keystat/ofw.htm>.

The decreasing trend in exports of forest-based products is due to increasing competition from neighbouring countries, including the PRC. To become competitive local producers need to improve their level of productivity. One investor has had to diversify products in order to survive. The investor has gone into production of builders' woodworks such as doors, jambs, mouldings and similar products which have found receptive markets abroad. Another investor has gone into fruit tree plantations to stay afloat and found this to be profitable.

Locally, the greatest competition of log producers comes from illegally cut logs. Because the suppliers of illegally cut logs have less cost of production they can outsell the legitimate log producers. Also, some sawmillers do not want to issue receipts for tax reasons, which the legitimate log producers cannot accept because it is not only illegal but also because they will run into trouble with their auditors.

It appears that in the international market it is only plywood that would have some degree of competitiveness because of lower cost due partly to the use of plantation logs and lower labour cost.

Infrastructure

Infrastructure is a crucial determinant in the decision of local or foreign firms to invest or not. Investors tend to concentrate around places with dependable facilities such as transport, power, information, communication and water systems (Herrin and Pernia 1987). These are found mostly in economic zones. Thus, investors have concentrated in Metro Manila, Southern Luzon, Central Luzon and Metro Cebu, owing to the presence of better infrastructure, besides proximity to raw material sources and/or markets (Pernia and Quising 2003).

Transportation: Traffic in major cities in the Philippines, especially Metro Manila, is heavy. In 2002 the length of asphalt and concrete roads increased by 4 percent; however, registered vehicles increased by 8 percent up from 3.87 million in 2001 to 4.18 million in 2002.¹¹ The disproportionate increase of motor vehicles against the increase in roads explains the worsening traffic, especially in Metro Manila.¹²

Road state affects production and marketing costs because bad roads lead to higher fuel costs, higher vehicle repair costs and longer time to deliver goods. The absence of good road systems is a disincentive for investing in a sector.

The Philippines is an archipelago comprising more than 7 000 islands with three main groups. The use of ships and vessels to move people and cargo is very important to the economy. Policies on shipping, therefore, are crucial to doing business. The Philippine shipping industry is characterized by high cargo and passenger tariffs. It is alleged that competition exists only in a small percentage of the routes, while a cartel-like situation exist in the majority of the shipping routes. To address this situation the government instituted some reforms in 1990 through liberalization and deregulation. However, the

¹¹ Pernia and Maligalig. Op cit.

¹² Pernia and Maligalig. Op cit.

implementation of these reforms has been slow. Domestic shipping costs such as fuel, interest rates, insurance and income and freight tax as well as handling costs are reported to be higher than other countries in the region (Lorenzo 1997 as cited in Austria 2002). This situation is further aggravated by the underdeveloped and below standard conditions of ports (Presidential Task Force on Interisland Shipping Industry 1989).

The government has continued its efforts to liberalize and privatize shipping transportation operations resulting in a more competitive business environment. Some shipping companies have modernized their fleets and improved services such as fast ferries and luxury liners giving wider choices to customers (Catelo 2004).

In the forestry sector, companies operating in the forest build their own road systems because no such systems exist. However, their road networks have to connect to government (either national or provincial) roads which are often in bad shape. Where processing of logs to finished products is done in factories close to urban or urbanizing areas, government roads do exist, but some need repairs. One plywood manufacturer remarked that the government should improve the road system to reduce transportation costs. Ships and barges are often not an option because of the absence of these facilities nearby. Companies have to transport their logs or wood products some distance to the nearest port. One company opted to build its own port for long-term cost reduction in terms of vehicle repair, road repair and fuel cost.

The state of transportation facilities in the country has often been a disincentive to higher investments in the forestry sector.

Telecommunications: The National Telecommunications Commission (NTC) reported approximately 7 million telephone lines in 2002, catering to 3.3 million subscribers. However, in the following year the number of installed telephone lines decreased by 31 percent and the number of subscribers by 9 percent. Telephone density is nine lines per 100 people and four subscribers per 100 people. However, there has been a dramatic increase in the number of cell-phone subscriptions which reached 15.4 million in 2002 and increased by 46 percent in 2003.

Within field operation areas, forest companies establish their own communication systems. However, it is difficult to communicate outside. Often, there are no transmitter facilities for cell-phone companies and the use of satellites for cell-phone transmission is very expensive. Internet use is very limited or non-existent. Commercial telephone landlines are also non-existent in most upland operations of forest-based companies.

Power: The power rates for residential, commercial and industrial uses among Association of Southeast Asian Nations (ASEAN) countries in 2003 are shown in Table 7 (ASEAN Energy Center 2003). The rates have risen because of the ongoing worldwide energy crisis.

Table 7. Ranges/kWh for ASEAN countries in 2003 (in US cents/kWh)

| Country | Residential | Commercial | Industrial |
|-------------------|-------------|---------------------|---------------------|
| Brunei Darussalam | 2.88-14.42 | 2.88-11.54 (7.21) | 2.88-11.54 (7.21) |
| Cambodia | 9.17-17.03 | 15.72-17.03 (16.38) | 12.58-15.72 (14.15) |
| Indonesia | 1.69-4.60 | 2.77-5.65 (4.21) | 1.71-4.38 (3.05) |
| Lao PDR | 0.55-3.8 | 4.18-5.22 (4.70) | 3.51 |
| Malaysia | 5.53-8.94 | 2.63-10.52 (6.58) | 2.63-10.52 (6.58) |
| Myanmar | 8.14 | 8.14 | 8.14 |
| Philippines | 3.15-10.71 | 3.68-9.85 (6.77) | 3.35-10.84 (7.10) |
| Singapore | 9.23 | 4.42-7.18 (5.80) | 4.16-6.69 (5.43) |
| Thailand | 3.41-7.47 | 2.94-7.47 (5.21) | 2.94-7.13 (5.04) |
| Viet Nam | 2.92-8.17 | 4.24-13.96 (9.10) | 2.83-13.96 (8.40) |

Source: ASEAN Energy Center (2003).

In the early 1990s the Philippines suffered severe power shortages with brown-outs of ten to 12 hours a day. The shortage was solved when President Fidel Ramos contracted foreign and local power suppliers to augment the installed capacities of power-generating installations. This led to the enactment of the Electric Power Crisis Act and the establishment of the Department of Energy in 1993 (Perez 2002). In 2001, the installed power-generating capacity of the country was 13 380 megawatts (MW) with a dependable capacity of 11 191 MW. The peak demand for electricity in 2001 was 7 497 MW; there was a required reserve of 2 459 MW and a balance of 1 235 MW as excess capacity (Perez 2002).

In 2002, industrial power consumption declined in comparison other sectors due partly to theft and transmission losses. Power disruption causes production losses. A survey showed that small firms incur bigger losses than large firms because only 24 percent has individual or shared power generators.¹³ In spite of the reported excess capacity indicated above and because of the experiences in the 1990s, 55 percent of large firms are equipped with generators that enable them to maintain continuous operations. Firms in provinces south of Metro Manila known as the CALABARZON (the provinces of Cavite, Laguna, Batangas, Rizal and Quezon) are so concerned about power inadequacy that 43 percent of all firms in these provinces either have their own generators or share them with other firms. This contributes to 14 percent of their energy consumption. Half of the electronics firms possess generators, as do 31 percent of the food and food-processing firms, 29 percent of textile and 25 percent of garment firms. The most sensitive industry group to power disruption is the food and food-processing industries. In Metro Manila the mean losses of small food and food-processing firms are greater, at 10 percent of their production volume. The study noted that owning and running power generators are more costly than obtaining electricity from the public utility grid.¹⁴

The cost of power is already high in the Philippines and it is expected to rise further because of the increase in the price of fossil fuel. Most forest-based companies generate their own power using diesel fuel. Because of the remoteness of its location and the poor road systems, one company has resorted to barging its diesel supply from Manila. Due to the

¹³ Pernia and Maligalig. Op cit.

¹⁴ Pernia and Maligalig. Op cit.

increase in the price of fuel the company can only provide a limited supply of diesel fuel for its field operations. The company, as its corporate social responsibility, has been providing power to the local government and the national police because the local electric cooperative has not been operating regularly. This has increased its power cost.

Water supply: Many of the logging companies have to develop their own water systems in the area. One company developed its own water supply and has been providing water to the local government and other government offices.

Governance and institutions

Policy

Various policy dimensions affect investments in the forestry sector. Among them are:

Stability of policies: Policies should not be static; they are expected to change with fluctuating economic, social and political situations. However, policies should be stable in the sense that they are not changed at the whims of policy-makers or because there have been changes in the administration of an office; neither should they be changed for the wrong reasons. Such a situation would create loss of confidence in the sector and would drive away investors.

Forest policies in the country are unstable. Whenever there is a new DENR Secretary, policies change, or whenever an event takes place in one area of the country policy is changed for the entire country.

For example, a disastrous flash flood occurred in late 2004 in the northeastern part of the country which media blamed on illegal logging and deforestation. As a result, and without the benefit of an investigation, the Secretary of the DENR cancelled logging operations in the provinces where the flood occurred and suspended all logging operations in the country (DENR 2004a). The legitimate logging companies in Mindanao and elsewhere suffered through no fault of their own, just because the climate induced this disastrous flood.

In another case, a people's organization (PO) was allegedly caught with illegally cut logs. Subsequently, all resource use permits (RUPs – permits to remove fallen or diseased trees in the natural forests of CBFMAs) throughout the country were suspended, even those that adhered to all government regulations. Some of the POs have outstanding loans for the establishment of small/mini-processing mills and as a result of the suspension of their RUPs they could not fulfill their loan obligations.

In the transport of logs or manufactured products such as lumber the regulation is that a 20 percent inventory of the load is made. Without warning, there was an order to conduct a 100 percent inventory. This resulted in the delay of shipment, not counting the cost that the shipper had to shoulder in the conduct of the inventory.

Implementation of policies: Often policies do not achieve the expected results because of poor or improper implementation. This stems from misinterpretation of the procedures or the implementers lack the initiative to pursue the intentions of the policy. An example is the

registration of tree plantations on private lands. The policy calls for the Community Environment and Natural Resources Office (CENRO) to take the initiative to register plantations. Instead, CENRO waited for the investor to go to the CENR Office to register his plantations.

Another example is the regulation removing the requirement of a harvesting and transport permit for trees planted in private lands (DENR 2004b). All that is needed is certification from the local government unit (LGU) or a registered forester that the logs were harvested from private lands. This is a regulation that smallholder investors have been clamouring for from the government to provide. However, the regulation has been abused. Some unscrupulous plantation owners and two registered foresters conspired to defraud the government by certifying a higher volume than what had been harvested and filled the difference by harvesting timber from elsewhere. This caused the suspension of a very well-intentioned policy that would have benefited smallholder tree farmers.¹⁵

Strength of the judicial system

The judicial system is slow and the maxim of ‘justice delayed is justice denied’ is apt to describe the situation in the country. Furthermore, accommodations are made. One company filed a case against a *kainginero* (slash-and-burn farmer) but the public prosecutor has been making representations to the company to drop the case as an act of compassion to the *kainginero*.

Recently the Supreme Court of the Philippines has designated 117 trial courts as environmental courts to hear cases involving violations of laws protecting the country’s natural resources (Salaverria 2008). Forty-five of these courts were designated as forestry courts. It is hoped that this will speed up the litigation of cases.

Corruption

Corruption is pervasive in the Philippines, from the lowest ranking regulatory officer to higher levels of government officers, as can be gleaned from reports in the local newspapers. In one case, Congress is investigating the alleged anomalous use of PhP728 million (US\$15.17 million) that was distributed to Congressmen and local officials prior to the 2004 national election, supposedly for the purchase of fertilizers. The alleged perpetrator, a former undersecretary of the Department of Agriculture (DA), said during the investigation that 159 members of the House of Representatives and local officials received their share from the fertilizer funds. Even those in cities and urban areas where no agriculture is conducted received shares (Diaz 2008a). In another case, six high ranking members of the Philippine National Police attended a conference in Moscow using government funds. The report of the police investigating panel said that the use of government funds for the purpose of the trip was illegal, violating RA 9498, the General Appropriations Act of 2008 (Diaz 2008b).

In an undated USAID-funded survey on corruption, companies were asked if anyone in the government had asked for a bribe. Replies were: LGUs (41 percent), payment of income

¹⁵ F. Josapat, Chairman Bislig Barobo Hinatoan Lingig Tagbina Farmers Multi-sectoral Group Association, Inc. (an association of tree farmers in Caraga), personal communication, July 2008.

taxes (39 percent), national government permits or licences (28 percent), compliance with regulations on importation (13 percent), supplying government with goods and services (15 percent), collecting receivables from the government (11 percent) and utilization of government incentives (4 percent) (USDA 2005). The forestry sector is no exemption from this business blight.

A survey conducted by the Political and Economic Risk Consultancy Ltd (PERC) showed that the Philippines is the most corrupt nation in Asia. The survey conducted in January and February 2007 asked 1 476 expatriate executives to rate 13 countries in Asia as to which was the most corrupt. On a scale of 1 to 10, 10 being the most corrupt, the Philippines scored 9.40. Singapore and Hong Kong are rated to be the least corrupt. Asked whether corruption in a given country affected their willingness to invest or expand their investment, the Philippines scored 8.40 where a score of 10 meant that corruption in that country was a major deterrent to willingness to invest (The International Herald Tribune 2007).

Corruption is perceived to be widespread in the forestry sector. As related by the President of the Bislig Barobo Hinatoan Lingig Tagbina (BBHiLita) Multi-sectoral Group Association, Inc. of Surigao del Sur Province, which is registered on the Securities and Exchange Commission (SEC), the expenses of log owners when they transport their logs is about PhP3 000 (US\$66.67) per shipment.¹⁶ This is for payment at check-points along the highway. He further said that if all the papers are in order, the persons manning the check-points look for traffic violations. Normally, log shippers 'pay' to facilitate the movement of logs and not be delayed at the check-points. In order to recoup their payment at check-points, the log shippers resort to overloading.

Corruption is a two-way street. The farmers ask for favours from government officials for which they have to pay the latter to overlook illegal activities.

Other potential sources of corruption are the many requirements that are difficult to comply with. The policy to first obtain a permit to establish a processing plant before obtaining a permit to operate the plant is a possible source of graft. However, this has been corrected by DAO No. 2003-41 (DENR 2003b), which combined the permit to establish and to operate a processing plant into one document.

Foreign ownership provisions and policies on repatriation of profits

The Philippine Constitution provides that foreign investors can own 40 percent of equity in a corporation duly registered under Philippine laws. The Omnibus Investment Code (OIC) (EO 226 1987) provides that foreign investors can repatriate the entire proceeds of liquidation of investments in the currency in which the investment was originally made and at the exchange rate at the time the repatriation is made subject to the provisions of Section 74 of Republic Act No. 265 as amended. Furthermore, foreign investors can remit earnings in the currency in which the original investment was made and at the exchange rate at the time of remittance subject also to the provisions of Section 74 of RA No. 265.

¹⁶ F. Josapat, personal communication, July 2008. Op cit.

The constitutional provision of restricting foreign ownership of businesses to only 40 percent is a disincentive to investing in the country. Other neighbouring countries such as Singapore allow 100 percent ownership.

Labour costs and skills

The labour force is estimated at 27 million (AC4you.com 2008). It is said that the cost of labour in the Philippines is much cheaper than in some neighbouring countries (see Table 8). Filipino labour is well educated and it is highly available. Workers have a satisfactory command of the English language. However, the top echelon of Philippine labour is expensive due to education in the United States and other western countries. The unemployment rate is approximately between 8 and 9 percent and about one-fifth of the labour force is underemployed. Many Philippine labourers are working abroad such as in the United States, the Middle East and other Far East countries (AC4you.com 2008).

The IMF and the Asian Development Bank (ADB) prepared ratings of labour in Asian countries covering the period 1999 to 2003. These are shown in Table 8.

Table 8. Labour ratings in selected Asian countries

| Countries | Managerial labour | | | Production labour | | |
|-------------------|-------------------|--------------|------|-------------------|--------------|------|
| | Quality | Availability | Cost | Quality | Availability | Cost |
| Philippines | 3 | 1 | 2 | 3 | 1 | 2 |
| Viet Nam | 10 | 5 | 1 | 3 | 1 | 1 |
| Malaysia | 5 | 5 | 5 | 3 | 3 | 3 |
| PRC | 10 | 10 | 1 | 4 | 1 | 2 |
| Indonesia | 10 | 10 | 2 | 5 | 1 | 1 |
| Thailand | 10 | 10 | 4 | 4 | 2 | 1 |
| Japan | 1 | 1 | 10 | 1 | 10 | 10 |
| Singapore | 1 | 10 | 8 | 1 | 10 | 8 |
| Taiwan, P.O.C. | 1 | 8 | 9 | 1 | 8 | 9 |
| Hong Kong, S.A.R. | 1 | 10 | 10 | 1 | 10 | 8 |
| Republic of Korea | 5 | 10 | 9 | 1 | 8 | 7 |

Ratings: 1 = best grade available; 5 = average grade; 10 = worst grade
Source: AC4you.com.

Philippine labour is very competitive with its neighbours, including labour cost at both managerial and production levels. They are also skilled. One forest-based company has a training programme for its labourers/workers. But because of their skills they are being enticed to join foreign companies outside the Philippines.

Recently, however, the increasing price of fossil fuel has had some effects on the labour market in the country, as in other countries. With the increasing price of oil the transport sector has increased fares. Similarly, the labour sector has been asking for an increase in take-home pay. Increase in salaries and wages will certainly increase the production cost of products, including those of the forestry sector. These will make the local products less competitive locally against imports and in the international markets. The handicraft industry

has been complaining about the high cost of production because of the high cost of power and increasing cost of labour in the country.

Rules and regulations on land tenure, usage rights and actual practice

Use of public forest lands by the private sector (investors) is covered by production-sharing agreements (PSA) except for the TLA. The last of the TLAs will expire in 2011. The PSA is a partnership between the government and the private sector where the resources are the share of government and the cost of operations is the share of the private sector. However, the tenure is not stable. It has been cancelled or suspended at will by the government. As indicated earlier, because of severe floods that occurred in Aurora and Quezon provinces in December 2004, the DENR suspended all logging operations in the country because logging was reputed to have caused the floods, notwithstanding that they could have been caused by the continuous rain that had occurred in the area for a number of days.

The incident should have been investigated first before any action was taken. However, all logging permits in Quezon were cancelled (there was no logging permit currently issued in Quezon) (DENR 2004a) and all permits in the rest of the country were suspended, even those as far away as Mindanao. The suspension of logging permits in Regions 11 and Caraga Region were eventually lifted but for the rest of the country this is on a case-to-case basis (DENR 2005b). The government is highly sensitive to criticism from the press that logging is the main cause of floods.

In another case, a load of allegedly illegally-cut logs was confiscated from a PO (usually a cooperative or an association composed of residents in the community). The government suspended all CBFMA RUPs throughout the country. The PO should have been investigated and penalties imposed if it was found guilty. The suspension was later lifted.

Land availability

A document was prepared by the DENR showing potential forest land areas for agribusiness investments (Table 9).¹⁷

The total area that is available for investment is around 1.7 million hectares, but these areas need further verification as to whether they are occupied and/or claimed or not. For investments in partnership with POs, the area is 1.9 million hectares.

¹⁷ DENR. Undated. *Potential areas for upland development/agribusiness investment (four million hectares timberland areas)*.

Table 9. Potential forest land areas for agribusiness investments (hectares)

| Region | CBFM projects | PhilForest area [†] | Remaining potential areas for validation | Total |
|--------------|------------------|------------------------------|--|------------------|
| CAR | 46 573 | | 258 652 | 305 225 |
| 1 | 47 345 | 3 110 | 51 245 | 101 700 |
| 2 | 442 669 | 42 227 | 215 648 | 700 594 |
| 3 | 78 066 | 7 540 | 68 052 | 153 657 |
| 4A | 17 623 | 268 | 41 611 | 59 502 |
| 4B | 189 147 | 2 304 | 241 501 | 432 953 |
| 5 | 41 385 | 1 812 | 38 947 | 82 145 |
| 6 | 43 783 | 50 | 70 443 | 114 276 |
| 7 | 45 477 | 9 221 | 60 223 | 114 921 |
| 8 | 107 099 | 1 922 | 225 494 | 334 515 |
| 9 | 59 574 | | 85 736 | 145 310 |
| 10 | 295 974 | 2 477 | 113 320 | 411 771 |
| 11 | 195 396 | 62 394 | 127 211 | 385 001 |
| 12 | 87 743 | 74 515 | 101 464 | 263 722 |
| 13 | 196 269 | 167 203 | 99 594 | 463 066 |
| ARMM | 32 232 | | | 32 232 |
| Total | 1 926 355 | 375 093 | 1 799 141 | 4 100 539 |

[†]The Philippine Forest Corporation is a subsidiary of the Natural Resources Corporation under the DENR.

Source: DENR (Op cit.).

In the case of CBFM areas, there is need for investment because the POs cannot develop their areas alone. A partnership among the POs, an existing wood processor and a bank, could be worked out to access credit for development of CBFM areas. The wood processor would be the ready market for the produce of the POs, a requirement by the banks before they provide credit. A modification of the scheme is to get the financial institution to provide funds as equity.

The Philippine Forest Corporation (PhilForest), a subsidiary of the Natural Resources Corporation of the DENR, has been mandated to develop jatropha (*Jatropha curcas*) for the production of biodiesel. It has been allocated about 375 000 hectares. The target is 2 million hectares.¹⁸ Competition for land can come from the growing of coconut and oil-palm in forest lands for the production of raw materials for methyl esterified coconut biofuel.

The conversion of prime agricultural lands into economic/industrial zones and for housing near metropolitan areas such as in the provinces of Laguna, Rizal, Cavite, Batangas, Quezon and Bulacan in Metro Manila has shifted food production into the uplands. Thus, forest lands have been converted to vegetable gardens and pineapple, banana or papaya plantations as found in Mt. Data in the Cordillera Administrative Region (CAR), around Mt. Matutum in

¹⁸ Celso P. Diaz, Consultant, Philippine Forest Corporation (PhilForest), personal communication, July 2007.

South Cotabato and in Mt. Apo in Davao and in other areas in the country. A large food and beverage corporation in the country has been granted lease of forest lands to the amount of 1 million hectares for the establishment of agricultural plantations.

The DENR has identified Caraga as a forest corridor and has earmarked the area for forest development (DENR 1999b). Other suitable areas such as the other regions of Mindanao which are rarely visited by typhoons are equally suitable for plantation development.

Market accessibility

Smallholder tree farmers in Caraga plant trees because there is a ready market for their logs. There are six veneer plants and seven plywood mills operating in the Butuan City area alone, not to mention many sawmills in the area. Because of the presence of these mills the farmers are certain that they can sell their logs. As the veneer and plywood mills are processing mostly *falcata* (*Paraserianthes falcataria*), the farmers are planting this species mostly.

Market accessibility also means the ease with which products are moved from production areas, whether from plantation sites or factories to places of sale. Movement of forest products, as is also the case of other farm products (vegetables, poultry, or swine), is often hampered by the presence of check-points along the highways, sometimes occupied by a composite team of DENR employees, the military/police and customs officers. Frequently, tree farmers are 'fined' for imagined infractions. This has been a disincentive for investment in the forestry sector as it is in other sectors of the economy. This is the advantage of locating in export-processing zones where exporters are not harassed at check-points.

Tax policies and practices

Taxation on corporations depends on whether the corporation is resident or not. Resident corporations are those that are formed/organized under Philippine laws. This differentiation is important because it determines whether the corporation is taxed in the Philippines and if so, how. Corporate tax is 35 percent (AC4you.com 2008). In addition, there are indirect taxes such as excise tax, percentage tax and stock action tax. VAT is imposed on the value of goods and services sold based on the gross retail price. A law increasing VAT from 10 percent to 12 percent was enacted in 2005 and has not been amended since (RA No. 9337 2005). Excise tax is imposed on goods manufactured or produced in the Philippines for domestic sale or consumption.

On 15 October 2007 the Bureau of Internal Revenue (BIR) issued Revenue Regulation No. 13-2007 (BIR 2007) prescribing the payment of VAT in advance by holders of permits (TLAs, IFMAs, TFLAs, AFFLAs, CBFMAs, SIFMAs) for the "transport of naturally grown or planted timber products for the purposes of consummating a sale". Even plantation developers in private lands are covered by the regulation. The advance VAT payment is based on the value of the wood on a cubic metre basis. The revenue regulation has listed a base price for various species in the major islands of the country as the basis for calculating the VAT. The VAT may be adjusted if there are changes in the base price and is deemed necessary by the Commissioner of Internal Revenue.

The holders of large timber licence agreements aver that the payment of the VAT in advance has little effect on their operations because they will eventually pay the tax anyway. However, to smallholder farmers this may present a problem for those who do not have the cash for the advance payment. If they cannot pay the advance VAT they cannot transport their products and therefore they cannot not sell them. This could be a disincentive.

Plantation logs are exempt from payment of forest charges (RA No. 7161 1991; DENR 1997a; DENR 2004b). However, some provinces have imposed taxes on plantation-grown trees under the guise of environmental protection fees. In Agusan del Sur, a province in the Caraga Region where many smallholder farmers plant trees, the environmental fee is PhP35 (US\$0.78)/m³.¹⁹ In Bislig City the environmental fee is PhP12/m³ (US\$0.27).²⁰ This is how the LGUs can increase their income. However, it is a major disincentive to smallholder farmers in developing tree plantations.

Incentives

Incentives are part of the overall investment environment in a particular country. The general incentives provided to businesses in the Philippines are contained in the Omnibus Investment Code (OIC) issued in 1987 under Executive Order No. 226 (EO No. 226 1987) and subsequent EOs amending it (EO No. 313 2004; EO No. 528 2006). Its purpose was to develop the country's industries, establish a competitive investment environment and discourage monopolies. The law provides a number of incentives to businesses and installed systematic procedures by which local or foreign companies or projects can register with the Board of Investments (BOI).

Under EO No. 226, incentives, fiscal and non-fiscal, are provided to preferred areas of investment, pioneer or non-pioneer, export production as well as rehabilitation or expansion of existing operations. Pioneer enterprises include those enterprises engaged in the manufacture and processing of products or raw materials that are not yet produced in the Philippines in large volume. It also involves the design, formula or system applied, as well as agricultural, forestry and mining activities, the services and energy sectors (EO No. 226 1987).

Among the incentives provided to qualified investments/projects are income tax holidays, tax credits, tax and duty exemption for imported raw materials and equipment, hiring of foreign labour, exemption from contractors' tax, a simplified customs procedure and other tax incentives. Investors can repatriate profits and earnings, pay foreign loans and interest and gain freedom from expropriation. These incentives can only be used for a period not exceeding eight years. EO No. 226 has been amended to extend the period of availment (EO No. 313 2004; EO No. 528 2006).

Apart from the general incentives to enterprises registered with the BOI there are other incentives provided to investors in the forestry sector. Plantation logs and other plantation products are exempted from payment of forest charges (RA No. 7161; DENR 1997a; DENR 2004b). There is also no restriction on the export of these products as opposed to the ban on the export of logs from the natural forest.

¹⁹ RTD Virgilio de la Cruz, DENR Caraga, July 2008, personal communication.

²⁰ Florio Josapat, July 2008, personal communication.

Some provinces have provided incentives to various types of businesses. Zambales Province provides agroforestry-oriented and other resource-based industries with capital of not less than PhP20 million (US\$444 444.44), or those with additional capital of PhP20 million, full exemption from payment of permits from the Office of the Governor for three years upon start of actual commercial operation; commercial tree plantations, starting from establishment of the plantation, are exempt from payment of real estate taxes, amusement tax and land tax for 15 years (Province of Zambales Ordinance No. 2002-89 2002).

Public perception of forestry and forest utilization

One of the institutions that can easily shape public opinion is the media. And one weakness of the Filipino is believing what he/she reads in the newspapers and what he/she sees or hears on television or radio. Because logging has been associated with forest destruction many media outlets equate natural calamities such as flash floods and landslides as the results of logging regardless of climatic and meteorological circumstances.

The DENR has changed policies because of adverse media reports on the forestry sector, resulting in the cancellation of logging licences in the provinces of Aurora and Quezon because of flash floods that occurred in these provinces, and the suspension of all logging permits in other parts of the country. This situation has dampened any enthusiasm in investing in the forestry sector.

Another illustration of the tip-toeing of the DENR on the subject of timber harvesting is its policy with respect to the culling of poor quality trees in its seed production areas. As a source of better quality seeds for its reforestation work, the DENR has established seed production areas (SPA) in each of the 16 regions in the country. SPA sites were selected from among the forest plantations within the region. Superior trees (of good form, health and height) were identified and marked as potential sources of seeds. To ensure that seeds produced by these selected trees are of high quality, deformed and poorly growing trees should be culled. However, no matter how many times regional officers request the cutting of deformed trees, the permission is never granted because of the DENR's fear that this may not be understood by the public who will suspect that the DENR itself is harvesting trees from its plantations.

On 11 March 1998, the DENR issued AO No. 98-11 (DENR 1998a) lifting the ban on the export of lumber. The purpose of the AO was purportedly to help the country earn foreign exchange and help stabilize the peso which was adversely affected by the regional economic crisis at the time. However, the public had a different perception of the issue, seeing it as another outlet for illegally cut logs and would translate into further destruction of the forest. The DENR relented and issued DAO No. 98-19 (DENR 1998b) recalling DAO No. 98-11.

Procedures and requirements for starting a business

Starting a business in the Philippines requires several steps depending upon the type of business. For single proprietorship, registration is with the Department of Trade and Industry (DTI) and one can register at the nearest DTI office in the province. The DTI has an office in every province. Partnerships and corporations have to register with the SEC. Corporations must have at least five incorporators and a maximum of 15. Businesses must register with the BIR and obtain a permit to print official receipts and obtain a Tax Identification Number. All

businesses must also obtain a business permit from the municipal local government unit where the business is located. Such a permit is often known as the Mayor's Permit. The Mayor's Permit must be displayed in the place of business at all times.

Any business that deals with natural resources, either through extraction/harvesting, or buying, selling, or processing, must obtain a permit from the DENR. Depending upon the type of business, the applicant must start the application at the CENRO, which then processes the documents and transmits them to the Provincial Environment and Natural Resources Office (PENRO) and to the Office of the Regional Director. For some permits the Regional Executive Director can issue the permit, otherwise the application goes to the Office of the Secretary through the Forest Management Bureau (FMB).

For businesses that have an impact on the environment, such as timber harvesting or processing, an Environmental Compliance Certificate (ECC) has to be obtained from the Environmental Management Bureau (EMB) of the DENR.

At the moment, all applications for establishing new processing plants or even expansion of existing ones are on hold pending a review of policies on the matter. Until 2004, the DENR required investors who wanted to establish a processing plant to first obtain a permit to establish the plant. Once the plant had been constructed, the investor had to obtain a permit to operate.

Dealing with licences

Permits for processing plants that are owned and operated by holders of TLAs, IFMAs and SIFMAs terminate once the tenure agreement ends. Permits for processing plants not owned by tenure holders have a duration of three years, renewable every three years. Municipal/city business permits are renewable every year.

Getting a tenure agreement approved or a licence to establish and operate a processing plant is not easy in the Philippines. It takes time to obtain such permits and some applications for tenure agreement have taken years, often because some of the requirements are missing and it takes time to obtain feedback that the documentation of the application is not complete. There are also too many requirements. One such example is in the application for a permit to establish and operate a mini-sawmill. If the applicant does not have a concession he has to show proof through a log supply agreement between him and a log supplier that he has a legitimate source of logs. No investor would plunge into establishing and operating a sawmill if he has not identified sustainable sources of legitimate logs. One also needs to submit a feasibility study. For the same reason, a legitimate investor would not invest without assuring himself first that he would make a profit in that investment.

The government's wood-processing plant rationalization policy is a constraint to investment in the sector. The policy seeks to determine an equilibrium of log supply and demand in a given region or province and seeks to issue permits on the basis of that equation of log supply and demand. It should be left to the investor to determine whether there is a sufficient supply of legitimate raw materials. It should be a business decision on the part of the investor and not dependent on government policy. The government can go ahead and determine log supply and demand information only to assist the investor to make a decision

and not as basis for issuing permits. Investors may decide to go into plantation development where there is log deficiency if all other factors for investing in plantations exist.

Zambales Province issued Provincial Ordinance No. 2007-67, otherwise known as Amended Guidelines for Environmental Regulations in the Province of Zambales, Superseding Provincial Ordinance No. 2005-17 (Province of Zambales 2007). The ordinance prescribes projects/undertakings to be covered by the Provincial Environmental Compliance Certificate (PECC), such as environmental enhancement projects like tree-planting projects in forest or sloping areas (regardless of size). A schedule for application and a processing fee is given in the ordinance.

Obtaining credit

Smallholder tree farmers do not have easy access to credit. Presently there is no window at the Land Bank of the Philippines (LBP) and the Development Bank of the Philippines (DBP) from which farmers can access capital. At a normal credit facility, the farmers are required to put up collateral, normally titled land. Previously, the LBP and DBP had a programme catering to smallholder farmers, but it was a failure. Accordingly, repayment was minimal. Furthermore, the banks now consider tree farming as high risk because of the long gestation period before the trees become mature enough for harvesting. Normally the banks would only provide a two- to three-year grace period prior to commencing payment of the loan. What they are now looking for before they can consider any credit to tree farmers are ready markets, technical assistance for the farmers and sources of subsistence for the farmers.

Both banks are open to a 'Big Brother' scheme. An anchor firm, which is a processor, enters into a contract with a PO or a smallholder farmer for the former to buy all the logs produced by the latter. A scheme would also be considered where a developer establishes a plantation and sells the plantation to a buyer, which could be a PO. When the plantation is three years old and the seedlings are assured of survival, a PO would access a loan from the banks and buy the plantation. The plantation developer uses the proceeds from the plantation that had earlier been sold in developing a new plantation, and the cycle is repeated. This could be a viable option for CBFM areas.

Investor protection

There are various risks involved in plantation development. First is the availability of rain to water the seedlings, especially in the first six months after planting. Second is the possibility that the plantation would be attacked by pests and diseases, and thirdly, which is the greatest risk of all, is the occurrence of fire. There is also the threat of destruction by typhoons and floods.

Unlike the agriculture sector where crop protection insurance exists, there is no such insurance for tree plantations. It is not known if any of the bigger stakeholders have taken insurance for their plantations. To improve the investment climate, the government should consider establishing tree crop insurance for the protection of plantation developers.

Tenure holders who have agreements with the government are compensated for their investments, including plantation development, upon termination of the agreement (DENR 1999a; DENR 2004b).

Paying taxes

Plantation logs are exempt from payment of forest charges. However, some provinces have imposed what is euphemistically called ‘environmental protection fees’. This is a fee collected on harvested forest products regardless of source (naturally grown or planted) to increase provincial income. Forest products are the target in provinces where they are abundant. As stated earlier, in Agusan del Sur, a province in the Caraga Region where many smallholder farmers plant trees, the environmental fee is PhP35 (US\$0.78)/m³.²¹ In Bislig City the environmental fee is PhP12 (US\$0.27).²²

Trading across national and international boundaries

There are a few restrictions on the trade of forest products. One is that lumber from naturally grown trees cannot be exported. However, veneer and plywood from naturally grown trees can be exported. What is the difference between lumber and plywood? Was it the intention to assure that logs from the natural forest are made available as raw materials for the veneer and plywood industry? This is not a valid reason because lumber is produced from logs inferior (lower grade) to veneer logs (they command a higher price than sawlogs) and veneer logs would not be sawn into lumber. Or is it because the furniture industry needs good lumber from the natural forest? If so, the furniture industry would still have access to good lumber for as long as it is willing to pay for the price of good lumber that is exportable.

There is a ban on the export of raw rattan poles. This is mainly because of the dwindling supply of rattan in the country. Other neighbouring countries have also done this.

However, plantation logs can be exported. This is a great incentive for the establishment of tree plantations in addition to the regulation that plantation logs are free from forest charges.

Vision and leadership of the country’s forest industry and forestry agencies

The government’s vision for the forest industry sector can be gleaned from the Medium Term Thrusts, Strategies and Priorities up to 2010 (DENR undated). The vision is for sustainable and more productive natural resource utilization that promotes investments and entrepreneurship and to attain self-sufficiency in forest-based products. The government seeks to accomplish this through greater business partnership between corporate and upland communities. The strategy is to assist investors in securing permits from other government agencies such as the NCIP and LGUs, link community-based programmes and small- and medium-enterprises to sources of finance and to provide technical assistance.

The industry sector, however, has a different vision, reflective possibly of the current situation in the forestry sector such as rapidly depleting forest resources. The industry does not seem to see much future in the sector. Recent events in the sector seem to support this observation. In July 2008, the Paper Industries Corporation of the Philippines (PICOP), one of the pillars of the industry in the last four decades, ceased operations. Troubled by diminishing timber supply and harassment by lawless elements that burned some corporation equipment, it was not able to meet its financial obligations, and thus was forced to close down.

²¹ RTD Virgilio de la Cruz, July 2008, personal communication.

²² Florio Josapat, July 2008, personal communication.

While a few large logging operations still remain, especially in Caraga and Region 11 (the last TLA will expire in 2011), the direction for forestry is towards smaller operations. The issuance of EO No. 263 (EO No. 263 1995), which established CBFM as the strategy for sustainable management and development of forest lands and resources of the country, has set the tune. This means that large forest industries have gone and the country has embraced (in policy at least) community forestry as an industry base. In addition, the government has provided policy support to small-scale forest plantation development both in government (DENR 2004b) lands and in private lands (DENR 2004a).

In the 1990s the DENR provided support to community forestry through foreign-assisted projects that tried to develop the forest areas of participating POs. Lately, however, there has been little financial assistance to upland communities, either in grants or loans. The President, however, has allocated PhP2 billion for upland development for 2009. The FMB has been tasked to develop the implementing programme and plan for the PhP2 billion.

In the wood-processing subsector, it appears that the government is ambivalent in its policies. While it has removed some barriers to investment such as combining the permit to build and the permit to operate a processing plant into just one permit, and reducing the requirements for harvesting and transport of logs, it has also instituted the wood-processing rationalization policy. Consequently, the various regions have to determine new processing plants and where in the region they can be established based on the availability of raw materials. This is a major disincentive to investors who would want to establish, for example, a sawmill in a province that does not have timber resources, although it would be profitable to buy the logs elsewhere and process them in a log-deficient province.

Issues on investment in the sector

Corruption

Corruption probably ranks the highest among the constraints to investments in the sector. The most pervasive is extortion at check-points along highways. Check-points were installed to ferret out illegal logs; however, they have become instruments for extortion. They are manned not only by DENR personnel but also by other agencies such as the police, the military and sometimes customs. Even if the logs and other forest products are properly documented and legal, personnel manning the check-points still demand payment. Smallholder farmers attest to the presence of corruption at check-points. Woodwork manufacturers from Region 2 (northeastern provinces) attest that they have to pay at check-points when transporting their products to Metro Manila.²³ Other items such as vegetables, poultry, or swine are also subjected to extortion at the check-points.

Corruption, if there is any, at the higher echelon of officials at the DENR is difficult to document. However, a few ranking officials are on 'floating status' (they are assigned to the Central Office without specific duties to perform) while their cases are being investigated. These officials are not yet guilty unless proven otherwise, but their 'floating status' shows that at least a complaint has been lodged against each of them.

²³ Personal communication with manufacturers in Cagayan, Isabela and Nueva Vizcaya provinces, 19-23 January 2009.

The Office of the President has instituted some measures to curb corruption. The Presidential Anti-Graft Commission has been investigating cases of reported corruption by government officials and many have been suspended or dismissed from the service. Those dismissed forfeit their retirement benefits and cannot be hired in any government position. The President has also instituted a lifestyle check on government officials to determine those who are in a position to commit graft and corruption and who are living beyond their means. Unfortunately, these two measures are not sufficient to eradicate these problems in government service.

Shifting policies of the DENR

The DENR shifts policies with little or no consultation with stakeholders. Logging permits were cancelled in Quezon and Aurora provinces and suspended for the rest of the country after the occurrence of floods and landslides because of heavy and prolonged rain without any consultation with the affected industry owners (DENR 2004a). Later, the suspension was lifted only for Caraga Region and Region 11, but for the rest of the country the suspension remained. On 5 January 2006, the DENR issued a Memorandum from the Secretary (DENR 2004a) canceling all existing IFMAs, ITPLAs, SIFMAs and CBFMAs because of acute non-compliance with the terms and conditions of their tenure instruments. This action of the DENR has halted activities of the various tenure holders, including pending plantation development and wood processing. Apparently, there was no consultation with the stakeholders prior to the issuance of the order.

Overregulation of the forestry sector

The government often has policies that are outdated and not in touch with the times. Take, for instance, the policy on sawmills. Republic Act No. 460 (RA No. 460 1950) prescribes that “no person, association or corporation shall operate a sawmill without securing a permit from the Director of Forestry”. The law was enacted in 1950. Why should the Director of Forestry (and now DENR) regulate a business operation such as sawmills, and for that matter veneer and plywood mills? Operating wood-processing mills is different from logging because the latter involves the extraction of natural resources. Sawmilling involves the conversion of a log that has already been given permission by the government to be harvested through a logging permit.

Establishing a sawmill is basically a business proposition and it is up to the investor to decide, based on feasibility studies, on when and where to establish the sawmill and how big it should be. The DENR issued Memorandum Order No. 96-09 (DENR 1996) ordering the rationalization of the establishment of mini-sawmills. The objectives of the order are to maximize wood recovery from forest and tree plantations; optimize wood utilization through the establishment and operation of more value-added wood-processing facilities; and establishment of low-capital but labour-intensive wood-processing plants in rural areas close to the raw material source owned and operated by cooperatives and community organizations. During interviews²⁴ with smallholder farmers in the Caraga Region, the main reason they gave for planting tree species in their small farms consisting of 1-5 hectares is the presence of wood-processing mills (sawmills, veneer and plywood) within short

²⁴ Interviews were conducted in Caraga Region in July 2008 with small-hold tree farmers' Chairman: Florio Josapat, Chairman: Bislig, Barobo, Hinatoan, Lingig, Tagbina Farmers Multi-sectoral Group Association, Inc.

distances from their plantations that are ready markets for their logs. If the DENR wants smallholder farmers to continue to plant trees it should allow more processing plants. The way to do this is to remove any regulations on the establishment of such plants and allow market forces to determine their viability.

The main reason, as expressed by DENR officers in the field, for the continued regulation of the establishment and operation of processing plants by the DENR is the fear that these mills (especially mini-sawmills) become outlets for illegally cut logs. The inability of the DENR to protect the forest and its plantations from illegal logging has been translated into a policy that restricts investments in the sector. One investor who wanted to establish a mini-sawmill as early as 2004 has been unable to do so because the rationalization plan of the region has not yet been approved by the DENR. It has been more than 12 years since regional offices have been directed by the DENR to prepare their rationalization plans.

The government often has too many requirements to enter into a business and the forestry sector is no exception. One foreign investor in the sector who is developing tree plantations on leased private lands when asked how to improve the investment climate in the forestry sector said that it would help considerably if the DENR reduced the requirements for establishing plantations and wood-processing plants. Take the case for establishing a mini-sawmill. A potential investor has to show that he has sufficient supply of raw materials from legitimate sources, a business plan and an ECC; the transformer directly supplying the electric power for the mini-sawmill from the main transmission lines should have maximum capacity of 30 KVA, or if supplied by an independent power-generating unit, the generator should have a capacity rating of not more than 40 KVA (DENR 1996). And there are other conditions. Why should the DENR regulate the power supply of a sawmill? It is up to the owner to determine the power supply.

The government is aware of the plethora of requirements that an investor has to meet in order to do business in the Philippines. For this reason the President issued Executive Order No. 428 (EO No. 428 2005) requiring all government agencies and instruments to “simplify rules, regulations, procedures and reduce reportorial requirements imposed on business and industry, with the aim of eliminating duplication and unnecessary requirements, thereby attracting and encouraging more investments and allowing business and industry to devote maximum effort and time to their operation and expansion rather than to compliance with excessive bureaucratic requirements”. LGUs were also encouraged to adopt similar measures (EO No. 428 2005). This has not resulted in the reduction of regulations in the forestry sector.

Implementation of the Master Plan for Forestry Development (MPFD)

In 1990, the DENR adopted a Master Plan for Forestry Development (MPFD) as its blueprint for planning forestry projects in the country. This was revised in 2003. However, the programmes identified in the MPFD have not been implemented.

Export of logs and lumber

Logs and lumber of natural forest origin cannot be exported (DENR 1988). Logs and lumber of plantation origin, however, can be exported except when coming from areas developed by tenure-holders such as TLAs as part of their obligation to reforest areas that are considered as government-owned (DENR 1989). Furthermore, lumber produced from imported logs

cannot be exported, except when processed inside export-processing zones, as it is difficult to distinguish the source of the logs – whether imported or locally produced – if they were processed into lumber elsewhere outside these zones. The ban on the export of log and lumber derived from natural forest is to ensure the continued availability of raw material supply to wood-dependent industries such as furniture, handicrafts, woodworks and the construction industry.

The policy to export logs and lumber from plantations is an incentive for plantation development, especially to smallholder farmers who plant in their own private lands. The ban on the export of lumber from natural grown timber does not engender investments in the sector, especially for those who would prefer to just import and process logs and then export the lumber.

Forest areas for investments

DAO No. 99-13 (DENR 1999b) declared certain portions of the public forest lands in Caraga Region as the Caraga Forest Plantation Corridor (CFPC), covering 684 503 hectares. The areas under the CFPC are still subject to final ground verification. As stated earlier, the potential area identified by the DENR for upland development and agribusiness investment is about 4.0 million hectares with close to 2.0 million hectares yet to be verified. Investors still have to wait for the verification of the actual availability of the areas for investments and this could dampen the interest of investors.

In addition to verification of the availability of the land area, soil tests have to be conducted to determine site species compatibility; an environmental impact assessment has to be made as a prerequisite for obtaining an ECC, a requirement for investment especially in environmentally critical areas or environmentally critical projects.

Thus far, only the Caraga Region has been identified as a plantation development corridor. Other regions in Mindanao which are not normally visited by typhoons are equally suitable for plantation development.

There is also growing competition for use of forest lands other than for growing forest trees. PhilForest has been granted authority over 375 000 hectares for the production of biofuel species such as *Jatropha*. In addition, a large food and beverage corporation has been granted the use of 1 million hectares for agricultural crop production.

Absence of sources of high quality planting materials

Large plantation developers such as IFMAs have the capacity to produce quality planting materials. Many of them have already established clonal nurseries. On the other hand, smallholder tree farmers such as those in Caraga, access their seeds for seedling production from any available sources, often from low quality mother trees. Some farmers sell seedlings of unknown seed sources along the highways. These are the types of planting materials accessed by smallholder tree farmers.

The DENR has already established clonal nurseries for the production of high quality planting materials. One private company in northern Mindanao is now producing cloned seedlings for sale to plantation developers.

Confirmation from the NCIP before a permit can be issued

The DENR cannot issue any permit now on any forest area without asking confirmation from the NCIP because of the provisions of the IPRA law that requires free and prior informed consent²⁵ of IPs in areas claimed by them. The NCIP also has to affirm that the subject area is outside the claim of the IPs. This affirmation takes time and increases the duration of obtaining a permit.

LGUs enacting ordinances

The Local Government Code (RA No. 7161 1991) authorizes the local governments to participate in the management of forest lands within their jurisdiction such as in forest protection, management of small watersheds and communal forest. However, LGUs see this as authority to enact local ordinances imposing certain requirements for the implementation of forestry projects within their jurisdiction.

A case in point is Zambales Province requiring industries considered to be environmentally critical projects or located within environmentally critical areas to obtain an ECC from the EMB. In addition, they have to obtain a PECC from the Office of the Governor (Province of Zambales 2007). Furthermore, the provincial government also directs the municipal/city mayors of Zambales not to issue a Business/Mayor's Permit to any business without the required ECC issued by the EMB and the PECC issued by the governor.

This requirement duplicates the ECC issued by the EMB and lengthens the process of obtaining a business permit. If the EMB issued the ECC there is no apparent reason why the provincial government should not issue a similar permit or even require such a permit.

The businesses covered by the ordinance include wood crafts, furniture, private land timber utilization and environmental enhancement projects such as tree-planting projects in forests or sloping areas regardless of size.

In another case, the Governor of the Province of Quezon issued an order banning the transport of gmelina (*Gmelina arborea*) logs grown in the province elsewhere. Farmers had contracted to sell their logs to pallet manufacturers in a neighbouring province. Because of this order, farmers could not sell their timber products. The purported reason for the ban was to ensure that local wood processors such as pallet manufacturers had sufficient raw material supply. The Regional Director of the DENR had to intervene to lift the ban.²⁶

Plantation logs are exempt from the payment of forest charges, yet LGUs have been imposing additional taxes on logs produced in their jurisdictions, including plantation logs. This is an additional burden, especially for smallholder tree farmers, and a disincentive to plantation development.

²⁵ This means that the consensus of all members of the ICC/IPs is to be determined in accordance with their respective customary laws and practices, free from any external manipulation, interference and coercion, and obtained after fully disclosing the intent and scope of the activity, in a language and process understandable to the community.

²⁶ E. Principe (former Regional Director who has jurisdiction over the Province of Quezon), personal communication, 2007.

Advance payment of VAT

The BIR has issued a memorandum imposing the advance payment of VAT on logs, including plantation logs, prior to transporting them. For large-scale log producers this may not present a problem, as they have indicated, but for smallholder tree farmers who normally do not have ready cash to pay for these expenses, this becomes restrictive because they have to make the payment prior to being paid for their logs.

Access to capital

One constraint in investing in the sector is the absence of a window for credit. When the Agrarian Reform Law was passed the LBP was established to facilitate the purchase by the government of lands that are subject to reform. With the country in dire need of timber for its industries, the government does not have a bank that caters to the needs of investors in the sector.

Meanwhile, the LBP has become a general development bank and can now provide credit for all development investors. The DBP is another government bank providing credit to developers. Because of previous experience when tree farmers were provided capital to develop small-scale plantations but did not pay their obligations, these two banks are now wary about lending to tree farmers. However, they would seriously consider lending to tree farmers again under a scheme where an anchor wood-processing enterprise serves as market for the farmers' products and agrees to guarantee the loan. They are even willing to consider providing equity to plantation development.

Rationalization of the wood industry

One of the major driving forces for plantation development as expressed by upland tree farmers in the Caraga Region is the presence of markets for timber. There are many sawmills, veneer and plywood mills in the region that are the major markets for timber. Conversely, the DENR has been strangling investors' initiatives to establish processing plants, particularly sawmills. It has instituted the rationalization of wood-processing plants requiring each region to submit a wood-processing rationalization plan which not all regions have complied with to date. Even expansion of existing processing plants is covered by this DENR directive. In the meantime, no processing-plant application in regions that do not have approved rationalization plans will be processed. This will kill the initiative of farmers to plant trees because they will not be able to sell their logs and the result will be further shrinking of the local supply of timber; expensive importation of logs and other wood products will result.

Investor protection

There is no investor protection for tree plantation development, unlike the agriculture sector where crop protection insurance exists. As the Philippines is in a typhoon belt, it is visited by an average of 20 typhoons a year and the tree crops are at risk of being destroyed by strong winds or by flash floods, especially during the early stages of plantation development.

Recommendations

1. To reduce corruption in the sector, the following recommendations may be considered:
 - Abolish all the check-points along highways that prey on the hapless log producers. Instead, the DENR should shift the monitoring of illegal logs to the point of exit of logs from the forest, or if that is not possible, to monitor the entry of logs to processing plants such as sawmills and veneer and plywood mills.
 - Simplify and reduce requirements for applications for tenure such as IFMAs, SIFMAs, AFFLAs, TFLAs, etc., as well as applications for the establishment of processing plants.
 - Remove altogether as a requirement for the registration of plantations the inventory of seedlings and require only information from the developers on the exact location of the plantations; this includes GPS data of the corners of the plantations and pictures of the seedlings. If necessary, CENRO officials may visit the area at government expense and not require the plantation developer to shoulder expenses for the visit. Registration of tree plantations, especially in private lands should be for data-gathering purposes only and not to regulate them.
 - Accelerate the investigation of officials who have pending graft and corruption cases and impose penalties on those found guilty and reinstate those found innocent.
2. The DENR should revise the policy of issuing permits for wood-processing plants, i.e., transferring them to the DTI for the issuance of business permits. Unlike logging or the harvest of rattan, bamboo and other forest products which is extraction of a natural resource, and thus should be regulated by the government, wood processing is basically a business activity and the decision to establish one should be left to the investor to decide on when to establish one and where to locate it. The DENR should monitor only the logs that enter the processing compound to ferret out illegally cut logs.
3. To promote investments in the sector, the DENR should immediately locate and verify on the ground areas that are available for investment. The boundaries of the areas should be delineated and maps should be prepared. A complete profile of the areas should be prepared to include information such as climatic type, general soil type, the presence of forest dwellers – whether IPs or settlers – population and whether any organization exists. Furthermore, site species compatibility should be conducted. If the area is occupied, discussions should be held about allowing the entry of investors into the area. Details of the agreement should be confirmed between the investor and the occupants.

Other preparatory documentation should also be carried out such as conducting an environmental impact study or an Initial Environmental Examination (IEE) for obtaining an ECC for environmentally critical projects or for those located in environmentally critical areas. While investments are welcome on public forest lands, conversion of forest lands for agricultural purposes should be studied thoroughly to avoid cutting of the forest to give way to agricultural crops. Furthermore, such investments could be directed to CBFM or CADT/ CALT areas to provide the opportunity for upland communities to benefit from such investments.

4. To provide more incentives to investors in wood processing, the policy of not allowing the export of lumber processed from imported logs should be studied carefully in the context of abolishing it if it is found to be a constraint to investment in the sector. Investors, especially local investors, may simply want to process imported logs into lumber and other finished products and export them if profitable. Again, this is over-regulation of the wood industry by the government.
5. An agreement should be made between the DENR and the NCIP regarding the issue of the IPs' free and informed prior consent. The process should be studied for the purpose of shortening it.
6. Regarding LGU requirements on investments in the sector, the DENR should discuss the issue with the LGUs and should obtain their permission as part of the investment package. It should also discuss with LGUs what policies the latter could adopt to attract investments in their jurisdictions.

Before the DENR changes its policies, especially those that affect the entire industry, it should consult with the stakeholders first. This should allow the industry and the POs/IPs to explain their perspective relative to any policy change and consequently help to stabilize policies in the sector.

1. Make use of the MPFD as the basis for planning national forestry projects/programmes.
2. The media is a formidable force in creating/forming public opinion. However, it believes that the only reason for floods or landslides during a typhoon or prolonged rains is prior forest destruction and therefore any harvesting of trees should be prohibited. The DENR should embark on a rigorous campaign for the media to understand that not all climate-related calamities are caused by timber harvesting.
3. Because of the absence of a development bank that caters to the needs of the forestry sector, the DENR should evolve a partnership among the plantation developers, the development banks (such as the LBP and DBP) and the wood-processing industry. The banks have signified their interest in supporting such a partnership where the wood processor acts as the ready market for the logs produced by the plantation developer and the bank would provide the capital for the venture. At least two wood processors have signified their willingness to participate in such a venture.
4. A variation of the scheme would entail the following: A plantation developer is provided credit by a development bank. He develops tree plantations within CBFMA areas or within the CADT/CALT areas of IPs. When the plantation is fully established, possibly after the third or fourth year of the development, the bank provides credit to the CBFM organization or to the IPs to purchase the plantation from the developer. With the proceeds of the sale of the plantation the developer can again develop plantations in another area. This scheme can be replicated in various areas of the country with several such activities ongoing at the same time. This assumes that the DENR identifies the potential areas for plantation development within CBFMA or CADT/CALT areas.

5. The DENR should discuss with the BIR regarding the payment of advance VAT. Smallholder farmers should be partly exempted and they should pay the VAT only after they have been paid for their log deliveries.
6. The DENR should share the technology for the production of high quality planting materials, especially with cooperatives and individual families engaged in seedling production. This will make high quality planting materials more accessible to smallholder tree farmers and improve their productivity. This will also support small family enterprises in seedling production.
7. In the agriculture sector there is national crop protection insurance to insure crops against natural calamities including pest and disease outbreaks. There is no such safety net in the forestry sector and yet forest plantations are also subject to similar disasters. The government should look at the possibility of establishing a tree plantation protection insurance system.

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Encouraging private investment in the United States forest sector

Doug MacCleery and Megan Roessing¹

This paper does not reflect any policy position of the United States Department of Agriculture/Forest Service or the United States Government

This case study is part of the project Creating Space for Private-Sector Financing in Forestry – Removing Constraints to Investments. The study is designed to investigate the effects of factors influencing domestic and foreign investment in forestry in the Asia-Pacific region and to provide advice to governments for enhancing the investment climate through the removal or adaptation of constraints.

Background and overview of the forest sector in the United States

Forests have exerted a major influence on the history of North America and on the economies and cultures of its peoples. Native peoples and early settlers from Europe relied on forests as an indispensable source of food, clothing, fuel and building materials for homes, as well as for spiritual sustenance. As European/American populations grew, especially after 1750, forests continued to be a primary source of fuel and raw materials. Wood was the primary fuel used in this country until the last half of the nineteenth century. Wood warmed people, cooked their food, produced iron and drove locomotives, steamboats and engines. People used lumber, timber and other structural products as the primary material for building houses, barns, fences, bridges, ships and even dams and locks. These wood products were essential to rural economies across the nation, as well as to industry, transportation and the development of towns and cities (MacCleery 1992; Williams 1989).

Forests were also habitat for the wildlife that supplemented the diet of millions of Americans for centuries. However, even more important to the American diet was food produced on land cleared of its forests and employed for agricultural use. This was by far the primary cause of forest loss.

In the spiritual dimension, the forest, and the wildness it represented, has also played an important role in the identity of the nation. This was expressed in the writings of Henry David Thoreau, Ralph Waldo Emerson, George Perkins Marsh and others, and was first evidenced politically during the late 1800s by efforts to address concerns over the rapid loss of forests and decline in wildlife populations. There is no question that without its forests, the United

¹ United States Department of Agriculture/Forest Service.

States would have had a decidedly different history, and would be a decidedly different place than it is today (MacCleery 1992; Williams 1989).

Area and nature of forests

After two centuries of decline, the area of forest land in the United States stabilized by about 1920 and is currently about two-thirds what it was in 1600. Today, agricultural lands continue to revert back to forests, but this is being offset by forest loss due to urbanization (USDA/Forest Service 2008b).

Currently, the United States has the fourth largest existing forest estate of any nation, with 8 percent of the world's forests, exceeded only by the Russian Federation, Brazil and Canada. About 33 percent of the United States (304 million hectares, 750 million acres) is forested (USDA/Forest Service 2008b) (Figure 1). These forests vary from sparse scrub woodlands in the arid, interior West to the highly productive forests of the Pacific Coast and the South.² Forest types range from pure coniferous forests to multispecies mixtures, including extensive and diverse deciduous forests.

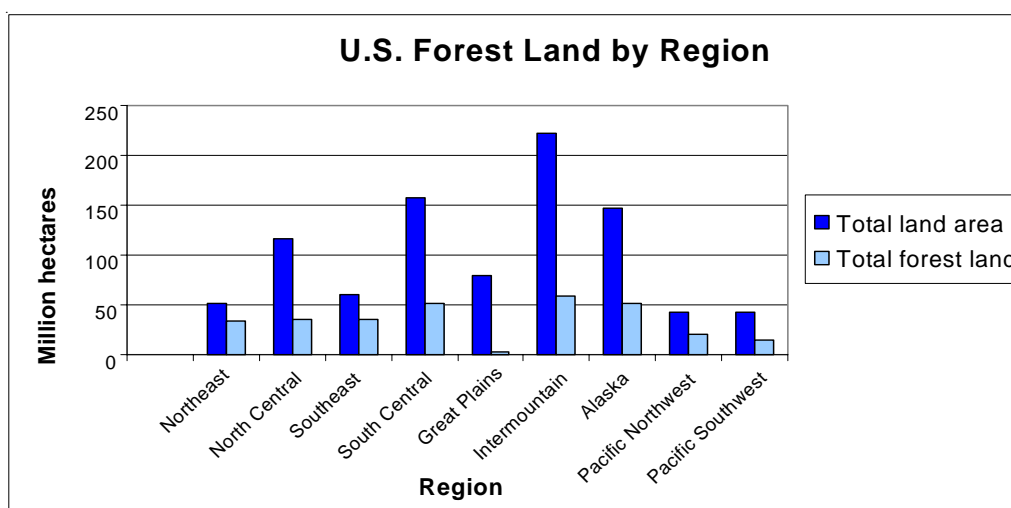


Figure 1. Forest land by region (USDA/Forest Service 2008b)

About two-thirds (208 million hectares, 514 million acres) of the nation's forests are classified as productive enough to produce commercial forest products and are not legally reserved from timber harvest. About 10 percent (30 million hectares, 74 million acres) of forest land is reserved for non-timber uses and managed by public agencies as parks, wilderness or similar areas. An additional 22 percent of unreserved forests (66 million hectares, 162 million acres) are unproductive for growing industrial wood, but are of major importance for soil and watershed protection, biodiversity and wildlife habitat, domestic livestock grazing and other uses (USDA/Forest Service 2008b).

² Forest land is land at least 10 percent stocked by forest trees of any size, including land that formerly had such tree cover and that will be naturally or artificially regenerated (USDA/Forest Service 2001).

Land area, forest ownership and timber harvest

Historic shifts in forest area and management emphasis by ownership category: American society in the twentieth century changed from rural and agrarian to urban and industrialized. America's forests were the beneficiaries of a number of major technological changes that collectively acted to substantially reduce the pressure placed on them by human demands. Conversion from wood energy to fossil fuels took a huge burden off American forests, particularly as population levels continued to grow. Today's farmers, on average, grow five times more food per hectare than their grandfathers did in the 1920s. Because of this, the inexorable, three century-long conversion of forests to farmland largely halted in the 1920s.

The conventional wisdom at the beginning of the twentieth century was that, due to the long time frames and low economic returns involved in growing trees, the private sector could not be relied upon to shoulder much of the burden for growing the nation's wood, once the timber in the original forests was harvested. In addition to watershed protection, growing timber over the long term was one of the rationales for establishing the National Forests System.

Before 1930, large-scale private timberland ownership coupled with sustained management of timber was uncommon. Application of scientific principles to forest management was advocated by early American foresters and some industrialists, who proposed more favourable tax treatment to promote investment by deferring local property taxes until timber was harvested. However, decades passed before such laws became common. Eventually, rising wood product prices and tax law changes encouraged both improved wood utilization and spurred private sector investment in timber growing. Large-scale industrial ownership coupled with sustained management of timberland reached its heyday in the latter half of the twentieth century. As will be discussed later, by the end of the twentieth century large-scale industrial timberland ownership was supplanted by large-scale institutional timberland ownership.

There has also been a substantial shift in the mix of uses and values the public seeks from its forests (particularly public forests). Over the last two decades there was a substantial reduction of timber and other commodity outputs from federal and other public lands as the management focus of these lands shifted to recreation and biodiversity protection. Between 1985 and 2000, timber sales from the national forests declined by more than 80 percent and in 2007 the national forests accounted for only about two percent of timber harvests (Table 1). This reduction in harvest from public lands caused a shift in harvest to private lands, especially in the South, and to Canadian forests.

Since 1953, the area of forest land set aside in land-use categories that prohibit timber harvest has almost tripled to 30.2 million hectares (74.6 million acres) (USDA/Forest Service 2001; USDA/Forest Service 2008b). In spite of this shift in preferences for public land management, today's urbanized nation places record demands on forests for wood production. In addition, urbanization is reducing the area of forests available both for environmental services and wood production.

Table 1. Land and forest area, ownership and timber harvest in the United States (2008)

| Ownership category | All land | | All forest land | | Productive, non-reserved forest land | | Annual timber removals | |
|----------------------------|-------------------|-------------|-------------------|-------------|--------------------------------------|-------------|----------------------------|---------------|
| | Area (million ha) | % | Area (million ha) | % | Area (million ha) | % | Million m ³ /yr | % |
| Private | | | | | | | | |
| Corporate | — | — | 55.9 | 18% | 42.9 | 21% | 212.7 | 44.1% |
| Non-corporate ³ | — | — | 115.3 | 38% | 101.3 | 49% | 232.0 | 48.1% |
| Subtotal private | 576 | 63% | 171.2 | 56% | 144.3 | 69% | 444.7 | 92.3% |
| Public | | | | | | | | |
| <u>Federal:</u> | | | | | | | | |
| National forest | 77 | 8% | 59.6 | 20% | 40.0 | 19% | 10.7 | 2.2% |
| BLM | 106 | 12% | 19.3 | 6% | 2.7 | 1% | 4.3 | 0.9% |
| Other federal ⁴ | 78 | 9% | 21.7 | 7% | 3.0 | 1% | 3.0 | 0.6% |
| Subtotal federal | 261 | 28% | 100.5 | 33% | 45.6 | 22% | 18.0 | 3.7% |
| <u>State and local:</u> | | | | | | | | |
| State | — | — | 27.9 | 9% | 14.2 | 7% | 15.8 | 3.3% |
| County/municipal | — | — | 4.4 | 1% | 4.0 | 2% | 3.5 | 0.7% |
| Subtotal: state/local | 79 | 9% | 32.3 | 11% | 18.2 | 9% | 19.3 | 4.0% |
| Subtotal public | 340 | 37% | 132.8 | 44% | 63.8 | 31% | 37.3 | 7.7% |
| Total all owners | 916 | 100% | 304.0 | 100% | 208.1 | 100% | 482.0 | 100.0% |

Sources: Forest area, ownership and timber harvest from USDA/Forest Service (2008b). Timber removals for Bureau of Land Management (BLM), federal, and state and local categories are estimates. Land area figures are based on USDA/ERS (2001) and USDA and US Department of Interior statistics.

Current forest ownership patterns: Forest ownership is diverse and includes extensive private forests, federally managed public forests and public forests managed by states and local governments. As a general rule, federal and other public forests are managed for amenity or multiple-objective purposes, such as watershed protection, wildlife management, ecosystem diversity and, sometimes, timber production.

Private forests comprise 56 percent of all forest land and 69 percent of forests that are considered productive and are not reserved or withdrawn for non-timber uses (USDA/Forest Service 2008b). Forest lands managed by corporate forest landowners constitute 21 percent of

³ Non-corporate includes Indian Trust lands (land area: 22 million hectares).

⁴ Other federal land includes: National Park Service (land area: 34 million hectares); national wildlife refuges (land area: 38 million hectares); and Department of Defense and Department of Energy lands (land area: 6 million hectares).

productive, non-reserved forest lands⁵ and are generally concentrated in the South and the Pacific Coast. Forests managed by non-corporate private forest landowners are 49 percent of productive, non-reserved forest land (Table 1) and are primarily concentrated in the eastern United States (USDA/Forest Service 2008b).⁶

Federal lands are concentrated in the West and make up about 261 million hectares (646 million acres) or about 28 percent of the total land area of the United States. These lands contain 100 million hectares (247 million acres) of forest land – about a third of all forest land. The federal government has a direct management and policy responsibility for the federal forest estate. Federal lands are administered by a number of agencies (Table 1).

Federal law establishes broad policy direction for the management of national parks, national forests, national wildlife refuges and Bureau of Land Management (BLM) lands. The responsible bureaus and agencies in Washington, DC supplement this policy direction by issuing policy interpretation and implementation direction to their field units. The Forest Service is in the Department of Agriculture and most other land managing agencies are in the Department of the Interior. While all of these agencies reside in Washington, DC, they have different management missions. At times, coordination of these agencies to address common problems has been less than perfect.

Federal lands managed by the Forest Service and BLM have historically been managed for a broad range of management objectives, including timber production, watershed protection, recreation, livestock grazing, mining and wildlife management. National parks are managed for protection of natural and historic values and Fish and Wildlife Service lands for game and non-game wildlife habitat. Defense and Energy Department lands are often managed for timber and other multiple purposes when doing so is consistent with the primary mission focus of the administering agency. The Bureau of Indian Affairs manages Indian reservations in trust for the Tribes.

States manage 27.9 million hectares (68.8 million acres) of forest land and counties and municipalities manage about 4.4 million hectares (11.0 million acres) of forest land. State lands run the spectrum from management as parks and protected areas to management for income and timber production. Some states finance the cost of their forest administrative organizations from receipts from the sale of timber. Others, such as Washington State, manage extensive forest lands in trust to produce income for public schools.

Timber harvest by ownership category: Private lands currently supply 92 percent of the wood volume harvested in the United States (USDA/Forest Service 2008b). There are about 11 million private landowners and they manage for a broad variety of management objectives.

Private landowners with larger holdings typically have timber production as at least one objective, if not as the primary objective. About 65 percent of family forest owners with

⁵ Productive, non-reserved forest land is forest land that is capable of growing 1.40 m³/hectare/year of industrial wood (20 cubic feet/acre/year) and is not reserved in land-use categories that preclude timber harvesting.

⁶ Private corporate – an ownership class of forest land that is administered by entities that are legally incorporated.

Private non-corporate – an ownership class of private lands that are not owned by corporate interests. This includes Native American lands, unincorporated partnership clubs and lands leased by corporate interests.

holdings of more than 40.5 hectares (100 acres) have commercially harvested trees from their land at some time during their ownership tenure. As parcel size diminishes, so does the likelihood of commercial harvest. In the 1 to 9 acre size class only 16 percent of owners have commercially harvested trees (Butler 2008, p. 23). Typically, small forest owners will harvest once or twice in a generation, if at all.

Timber demand and supply situation

The United States per capita consumption of wood and paper products exceeds that of most other countries (Figure 2). Between 1965 and 2005, timber consumption increased by 59 percent, from 377 to 600 million m³ annually (Howard 2007, Table 5b).⁷ On a tonnage basis, consumption of wood products in 2005 was 62 percent of the total weight of most other materials combined – steel, aluminium, plastics and cement (Bowyer 2009).

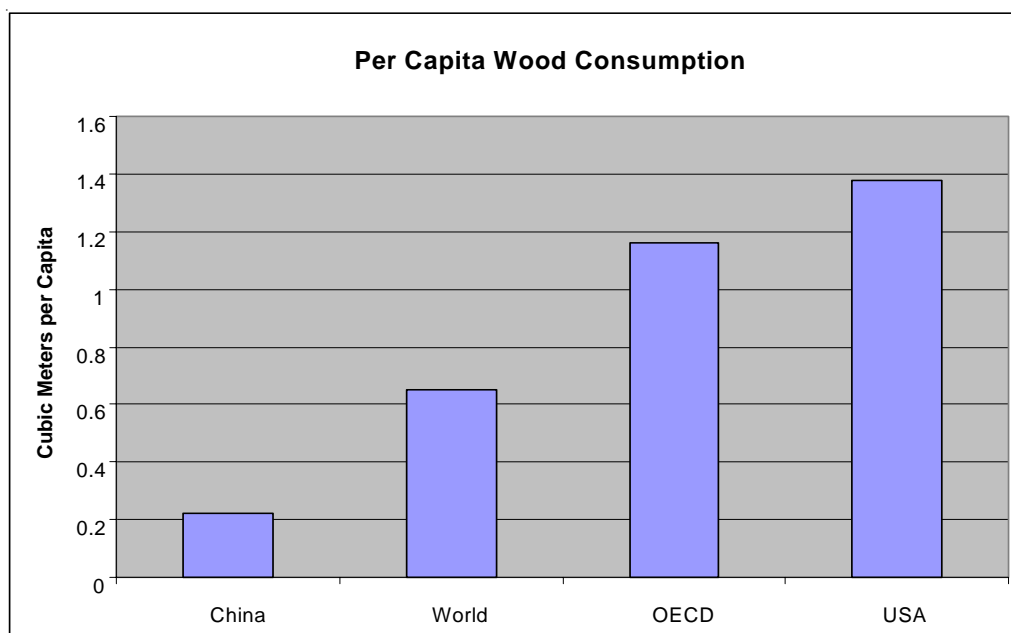


Figure 2. Per capita wood consumption

Source: China Timber Import Export Co/Hardwoodmarkets.com 2005, wahardwoodscomm.com/ppt/08AM/2008SnowWHC_AM.ppt; graph modified by Al Schuler

The United States is the world's largest producer of pulp, paper and paperboard products (Ince *et al.* 2007). The nation produces and consumes about one-fourth of the world's industrial timber (FAO forestry Web site⁸). The forest product sector, although small in comparison to the rest of the economy, is significant on a global forest sector scale.

⁷ In 2005, consumption included: lumber – 318 million m³; plywood and veneer – 40 million m³; and pulpwood-based products – 185 million m³. In addition, approximately 44 million m³ of wood was used for energy in 2005, mostly by industrial facilities (Howard 2007, Table 5b).

⁸ <http://www.fao.org/forestry/28815/en/>

The total value added by the production of wood and non-wood products “as a percent of all manufacturing contributions to GDP has remained relatively constant since 1947” (USDA/Forest Service 2004, p. 46). In 2006, the solid wood industry employed about 536 000 people; the pulp and paper industry another 414 000. “Combined they were 1.1 percent of all U.S. jobs and 7.1 percent of manufacturing jobs. This is down from 824 000 and 485 000 in 1950, when combined they were 2.5% of all jobs and 8.6% of manufacturing jobs” (USDA/Forest Service 2008a).

The United States is a net importer of forest products. The ratio of wood imports to domestic harvest in roundwood equivalents has increased over the past few decades, rising from 14 percent in 1965 to 38 percent in 2005 (or 5.8 billion cubic feet, 164 million m³) (Howard 2007). Lumber imports have increased steadily over the last few decades, culminating in lumber imports of approximately 106 billion m³ in 2005, principally from Canada. Lumber exports increased until 1988, when they started to decline. The United States exported approximately 11 million m³ in 2005 (Howard 2007, Table 5b). However, net trade of some types of wood and paper products has increased. Hardwood lumber exports, for example, have increased since 1990.

Forest product processing has expanded into new areas in the past few decades and production of engineered wood products is expected to continue to increase. Recycling of paper and paper products has increased as well; currently, about 56 percent of paper and paper products are recovered for recycling (AF&PA 2007⁹). The pattern of reduced output in the West and increased production in the South also holds true for pulpwood and plywood.

Summary of current conditions of forest land

A snapshot of forest conditions reveals (USDA/Forest Service 2008b):

- After two centuries of decline, the area of forest land stabilized in about 1920 and is about two-thirds what it was in 1600.¹⁰
- The area burned by wildfire each year has decreased by 80 to 90 percent since the 1930s. In recent years, the area burned by wildfire has increased, particularly in the western United States.
- Forest growth nationally has exceeded harvest since the 1940s. Today forest growth exceeds harvest by 40 percent and the volume of annual forest growth is four times greater than it was in 1920.
- Because forest growth exceeds harvest, the average standing volume of wood per hectare nationwide is about 50 percent greater today than it was in 1952; in the eastern United States, average volume per hectare has almost doubled.
- Populations of many wildlife species have increased dramatically since 1900. But some species, especially those with specialized habitats, remain a cause for concern.
- Tree planting on all forest land rose dramatically after the Second World War, reaching record levels in the 1980s (Moulton and Hernandez 1999).

⁹ http://www.afandpa.org/Content/NavigationMenu/Environment_and_Recycling/Recycling/Recycling.htm

¹⁰ Today, agricultural lands continue to revert back to forests, but this is offset by forest loss due to urbanization.

Overview of US policy and institutional frameworks

Forest policy evolved over more than a century in response to economic, social and environmental factors. Forest policy was designed, in part, to promote a favourable climate for investment in private forest management, while at the same time protecting the productive capacity of forests and reducing the adverse effects of forestry operations on soils, water and other environmental services. This obviously requires a balancing of private versus public values and interests.

The following section describes this policy framework and the roles of federal, state and local governments in the forest sector. A summary of these roles is contained in Box 1.

Roles of government in the forest sector

Federal role in the forest sector

Federal involvement in the forest sector is both complex and multidimensional. It encompasses: 1) management of extensive federal lands; 2) assisting in the protection of all forest lands from fire, insects and disease; 3) financial and technical assistance to forest landowners; 4) support for soil and water conservation; 5) research and technology transfer; 6) inventory and assessment of all forests; 7) regulation of some aspects of private forest management, e.g., endangered species, wetland conversion, industrial pollution and worker safety; and 8) taxation of private landowners and corporations.

Federal fire management

In cooperation with the states and local governments, federal land management agencies are involved in capacity building, financing and setting policy standards for protection of forests from wildfire, insects and disease. Such protection is a major encouragement to investments in private forest management. The Forest Service spends almost US\$700 million annually on wildfire preparedness and prevention. Federal expenditures for wildfire preparedness, prevention and suppression have increased dramatically over the last decade. Forest Service wildfire suppression costs rose from less than US\$200 million in 1997 to about US\$1.5 billion in 2006 (USDA/Forest Service 2007a). Over the years, the total cost of wildland fire management, which includes preparedness, prevention, suppression, fuel treatment (thinning and prescribed use of fire) and related costs, has increased from 13 percent of the total Forest Service budget in 1991 to 45 percent in 2008 (USDA/Forest Service 2007a).

Federal assistance related to forest health

The Forest Service also provides regional assessments of insect and disease problems, as well as cost-share funding to state governments to help prevent and suppress insect and disease outbreaks, regardless of who owns the land. In fiscal year 2008, approximately US\$44.5 million was appropriated for cooperative work with the states. Another US\$54 million was appropriated in fiscal year 2008 for forest health work on federal lands (USDA/Forest Service 2008c).

Federal assistance to landowners and support for conservation

In addition to its role in protecting private and public forests from wildfire, insects and disease, the federal government is engaged in capacity building in support of improved management of state and private forests. The federal government provides the states with funding for technical and financial assistance to private forest owners. In fiscal year 2007, the Forest Service provided US\$72 million to the states for such purposes (USDA/Forest Service 2008c). State foresters are the delivery or implementation vehicles for these federal programmes, which are usually supplemented by state and local funding.

The federal government also provides financial assistance to states for acquisition of land for conservation purposes.

Historically, federal and state cost-share programmes seem to have a significant impact on tree planting on non-corporate private forest (NCPF) lands. From 1951 to 1976, cost-share tree planting amounted to 47 percent of all tree planting on NCPF lands; from 1977 to 1997 it averaged 43 percent (Zhang 2002). That percentage dropped dramatically in recent years; in 1997, substantially less than 20 percent of tree planting on NCPF lands was cost shared (Zhang 2002). In spite of the decline of cost-sharing, the area planted by NCPF owners has remained high and now exceeds the area planted by corporate forest landowners (Moulton and Hernandez 1999).

Federal forestry research and technology transfer

Forestry research and development is a key element in developing the knowledge base for effective investment in forest management and processing. The federal government has one of the largest forestry research organizations in the world. Forest Service funding for research, including construction, and net of inflation, has increased from US\$259 million in 2000 to US\$326 million in 2008 (both in 2005 US dollars), although funding has been relatively constant at above US\$300 million per year (2005 US dollars) since 2002 (USDA/Forest Service 2008a, p. 2-90). In spite of this, between 1985 and 2008, the number of Forest Service research scientists declined from 985 to about 500 (NRC 2002; USDA/Forest Service 2008c, p. B-1). The most significant erosion of research capacity has been in the disciplines of wood technology and silviculture (NRC 2002).

The Forest Service maintains five regional experiment stations and numerous research work units throughout the United States. Research focus varies from traditional forest management research aimed at reforestation, nursery management and silviculture, to research on wildlife management, social sciences, recreation, urban forestry and environmental functioning and climate change. The Forest Products Laboratory in Madison, Wisconsin carries out wood utilization research designed to improve wood-use efficiency and extend the service life of wood products in all applications; it also has a research emphasis on wood biorefineries, nanotechnology, advanced housing and advanced composites. The International Institute of Tropical Forestry in Rio Piedras, Puerto Rico, focuses on scientific support for the sustainable management of tropical forests.¹¹

¹¹ More information on the Forest Service research programme can be obtained at <http://www.fs.fed.us/research/>

Federal forest inventory and assessments

The Forest Service research organization has conducted regular periodic inventories of the conditions and trends of all forest lands in the United States, regardless of ownership, since the 1930s. Reports are prepared both locally and nationally on forest area, productivity, growth and removals, species composition, size and condition of timber, and additional parameters, including forest health, mortality and disease.¹² The private forest sector has traditionally strongly supported collection of information on forests which informs investment in forest management and processing facilities.

In addition to forest inventories, the Forest Service, as provided by the Resources Planning Act of 1974 (RPA), prepares five- and ten-year assessments on the condition and trends, as well as the demand for and supply of renewable resources, including forests, rangelands, wildlife, recreation, and related resources. These assessments cover all ownerships, not just federal lands.¹³

Federal environmental regulations affecting the forest sector

The effects of federal environmental regulation on private forests include: 1) restrictions on the flexibility of private landowners to drain forested wetlands to increase site productivity for commercial tree species; 2) requirements to implement best management practices to meet federal and state water quality goals; 3) requirements to protect habitats of endangered and threatened species; 4) pesticide-use restrictions; and 5) limitations on the use of prescribed burning to protect air quality. With the exception of endangered species enforcement, state and local governments are the primary enforcement authorities for federal, state and local environmental laws affecting private lands. Appendix 1 summarizes the effects of the 1970s environmental laws on the forest sector.

Various agencies enforce environmental regulations, including: the Environmental Protection Agency (EPA), the Fish and Wildlife Service and the Army Corps of Engineers. The EPA was established in the 1970s to, among other responsibilities, implement the Clean Water and Clean Air Acts. Under these laws, the EPA establishes national and regional goals and standards. The individual states are then charged with enforcing compliance with some of these goals and standards and usually receive federal funding to help with implementation. If state compliance or enforcement efforts are inadequate, the EPA can implement direct enforcement actions.¹⁴

The EPA also has responsibility for establishing pesticide-use restrictions for specific insecticides, fungicides and rodenticides and to promulgate standards for training and other requirements for those certified to apply them. States are responsible for enforcing pesticide use and applicator training under EPA policy. Other examples of federal regulation include: 1) landowners wishing to drain or fill permanent wetlands are required to get a permit from the U.S. Army Corps of Engineers; and 2) the U.S. Fish and Wildlife Service (F&WS) regulates landowner behaviour involving migratory birds and endangered species. In addition, the

¹² More information on the forest inventory programme can be obtained at <http://www.fia.fs.fed.us/>

¹³ RPA assessment documents for 1989, 1993, 2000 and 2010: <http://www.fs.fed.us/research/rpa/assessment-pub.shtml>

¹⁴ More information on EPA programmes and US environmental laws can be obtained at <http://www.epa.gov/>

Animal and Plant Health Inspection Service (APHIS, a USDA agency) sets standards designed to reduce the risk of importing invasive species and takes direct action to eradicate invasive species once introduced.

Federal labour and worker-related regulations affecting the forest sector

The Occupational Health and Safety Administration (OSHA) is a federal agency that establishes worker health and safety regulations for industrial operations, including sawmills, pulp mills and other industrial operations, as well as logging operations in the forest. OSHA employees often directly inspect and enforce health and safety regulations. In 2007, OSHA had 2 150 employees, including 1 100 inspectors. In addition, 26 states have developed the capability to enforce OSHA rules.¹⁵

Employers are required to obtain insurance to cover the medical expenses of workers injured on the job. Workers' compensation boards in each state administer these programmes. The cost that a particular employer pays for workers' compensation insurance will increase based on a poor accident or injury record. This gives employers an economic incentive to create and maintain safe work environments.

State and local role in the forest sector

The state and local role in the forestry sector has some aspects that are similar to the federal role. These include: 1) management of public lands; 2) fire protection on all forest lands; 3) research and technology transfer; and 4) taxation. However, states and local governments have a much stronger role in regulation of forest practices on private lands. They are also the primary delivery vehicle for many programmes funded by the federal government to assist private landowners.

The 50 states are individually responsible for guiding and regulating management of private forests. Each state has a state forester and a public forestry organization whose role is to implement programmes to protect forests from fire, insects and disease and provide technical and financial assistance to private forest owners, especially those with small acreages.¹⁶

State and local regulatory enforcement

Most private forest management practices are regulated at the state and local level. The United States Constitution protects the right to own property and many states are involved in the protection of land tenure and private property rights (USDA Forest Service 2004). In recent years there has been a substantial increase in the number of state and local ordinances that have been enacted to regulate timber harvesting on private lands (Green and Siegel 1994). Such ordinances fall into three categories: water quality and wetland protection laws, sensitive and endangered species laws and forest practices laws.

¹⁵ For more information on OSHA see <http://www.osha.gov/>

¹⁶ For additional information on state forestry programmes and online access to programmes of individual states go to the National Association of State Foresters Web site: <http://www.stateforesters.org/>

States approach regulation of private forest practices differently. States having the strongest forest practices acts tend to be on the west coast (California, Oregon and Washington). These states generally require a logging plan to be drawn up and approved before logging can commence. Harvest plans are evaluated for their protection of streamside values, sensitive areas and wildlife habitat and reforestation is mandated if needed. The state-level comprehensive forest practices acts in the western United States limit the power of local and municipal governments to pass local forestry ordinances. In the eastern United States, towns and local units of government commonly adopt ordinances regulating forest practices on private lands (Green and Siegel 1994; Ellefson *et al.* 1995). States in the South tend to have the least stringent forest practice codes; often voluntary compliance with approved 'best management practices' for protecting water quality is all that is required. Data suggest that state and local regulations have the most significant effects on private timber supplies on the Pacific Coast (12-14 percent reduction in softwood sawtimber harvests) and the least in the South – 3-4 percent reduction in softwood sawtimber harvests) (Green and Siegel 1994).¹⁷

No states impose restrictions or quotas on the volume of timber or other forest products that periodically can be harvested from private lands. In other words, there are no legally mandated harvest flows or annual allowable cut limitations on private harvest. Regulations are aimed at reducing adverse environmental impacts of harvest operations and requiring reforestation when needed.

State forestry research and education

Most advanced forestry education and considerable forestry research occurs at state-run colleges and universities. Funding available for forestry research at universities that receive federal funding increased from US\$256 million in 2000 to US\$282 million in 2006 (2005 US dollars) (USDA/Forest Service 2008a, p. 2-90). Research at colleges and universities is typically funded from several sources, including the federal government, the states, industry and other sources, such as foundations (NAPFSC 1999).

Summary of federal, state and local responsibilities for regulating the forest operations

Today the United States has a mixed bag of federal versus state and local responsibilities for forest regulation and governance which ranges from: 1) direct federal control of both standard setting and enforcement (e.g., Endangered Species Act, federal land management); 2) federal policy regulatory oversight, with state and/or local enforcement on private lands (e.g., Clean Water Act, pesticide labeling and enforcement); 3) indirect federal control of standards through cost-sharing leverage (e.g., wildfire protection standards, the federal cost-sharing of private reforestation); and 4) state and/or local control (e.g., regulation of private forest lands, except for Endangered Species Act listed species). At the state and local levels, there is also a range of responsibilities. For example, in many western states the state government regulates private land forest practices, while many northeastern states delegate forest regulation to local ordinances.

¹⁷ While this was a study of state and local regulations, some of these regulations are developed under guidelines provided by federal regulatory agencies, e.g., best management practices to protect water quality under the Clean Water Act.

Roles of non-government entities in the forest sector

In view of decentralized forest regulation and extensive private forest ownership, non-government parties – such as corporate forest owners, non-corporate forest landowners and environmental groups – are major actors in how forests are managed. Private entities of all types are part of the natural resource public and private forest sector discourse and decision-making at local, regional and national levels.

Conservation and environmental NGO roles in forest management

While some non-government conservation organizations have been existence since the late nineteenth century,¹⁸ over the last four decades their numbers and political/social influence have increased dramatically. Currently, conservation and environmental non government organizations (NGOs) are involved in the forest sector at all geographic levels – local, state, national and international.

In the 1960s, many environmental NGOs tended to focus on national forest and other federal lands. This expanded in the late 1960s and 1970s when many NGOs were instrumental in the passage of the 1970s federal environmental legislation (for example, the Clean Air and Clean Water Acts, Endangered Species Act, and the National Environmental Policy Act). The 1970s environmental legislation was, in turn, used by many NGOs to challenge federal land management practices, both administratively and in the courts. Such challenges were instrumental in substantially reducing timber and other commodity outputs from these lands.

Over the last two decades, an increasing number of conservation NGOs became involved in the acquisition and management of environmentally sensitive land. For example, The Nature Conservancy (TNC) purchases and manages environmentally sensitive land for wildlife and biodiversity objectives. TNC has acquired more than 3.6 million hectares of wildlife habitat and manages over 1 500 reserves.¹⁹

NGOs may purchase and manage lands or may acquire property rights or ‘easements’ in land. These easements are generally designed to retain lands in their current use, such as forest or agriculture, but prevent development, such as residential or commercial uses. The use and acquisition of conservation easements has increased dramatically in recent years.

Some NGOs were established to focus on particular wildlife objectives. Examples include: Ducks Unlimited, the Wild Turkey Federation and the Rocky Mountain Elk Foundation. These NGOs seek to influence public attitudes and policy, but may also acquire and manage land or conservation easements to achieve their conservation objectives.

One of the most significant developments in the last 15 years is the emergence of non-governmental forest governance schemes. The Forest Stewardship Council (FSC), funded by the Worldwide Fund for Nature, emerged in 1993 with the objective of seeking to use markets to encourage improved management of forests. In the United States, the FSC is actively

¹⁸ For information on one conservation NGO that has been in existence since 1875 (American Forests), visit <http://www.americanforests.org/>

¹⁹ More information about TNC can be obtained from <http://nature.org/aboutus/>

promoting the independent, third party certification of private and state-owned forests.²⁰ As of August 2007, the FSC had certified over 9.3 million hectares (23 million acres) of forest land in the United States and 75 million hectares (185 million acres) worldwide (FSC-US Web site: <http://www.fscus.org/>). Many environmental NGOs strongly support FSC certification and have brought pressure to bear on major United States retailers of forest products to carry FSC-labeled products. These efforts have changed the forest governance landscape in the United States and other countries (Cashore *et al.* 2004).

Corporate forest landowner role in forest management

Forest lands owned by corporations tend to be concentrated on the west coast and in the South where the forests often are very productive for growing commercial timber.²¹ As would be expected, many corporate forest lands tend to be managed on relatively short rotations, using high yielding species of trees, usually conifers.

In the last decade many publicly-held forest industry firms have divested themselves of most or all of their forest holdings. Most were purchased for investment purposes by pension funds and other institutional investors seeking conservative investments. These timber investment management organizations (or TIMOs) purchase forest land from both industrial and non-industrial private landowners. Corporate forest landowners, like federal agencies and non-corporate forest owners, generally harvest their timber using logging contractors and short-term contracts.

In spite of their emphasis on timber production, corporate forest landowners have been sensitive to the growing environmental awareness in the United States and have increased attention to addressing the environmental effects of their forestry operations. In October 1994 the American Forest and Paper Association (AF&PA), which at the time represented 95 percent of the industrial forest land in the United States, approved a set of Sustainable Forestry Initiative (SFI) Principles and Guidelines. These guidelines were developed as a response to FSC certification efforts and provide performance measures for reforestation and the protection of water quality, wildlife, visual quality, biological diversity and areas of special significance. Agreement to adhere to these standards was made a precondition for membership in the AF&PA. The SFI programme has since evolved into an independent certification programme involving the verification by independent, third party auditors of an established set of SFI forest management standards and guidelines.²² Many corporate forest lands, TIMOs and real estate investment trusts (REITs) are SFI certified. As of 2007, over 21.4 million hectares (53 million acres) of forest land in the United States had been independently third party certified to the SFI standard (personal communication with SFI).

More than 60 years ago the forest products industry began what is now called the American Tree Farm System, designed to provide technical assistance, as well as encouragement and recognition for non-corporate landowners who manage their forest lands well for timber production, while protecting other values. In August 2008, the Tree Farm System was recognized as a forest certification body by the Programme for the Endorsement of Forest Certification schemes (PEFC).²³

²⁰ Information on the FSC can be viewed at <http://www.fscus.org/>

²¹ The State of Maine in the northeast also has a significant concentration of corporate forest lands.

²² Information on SFI can be found at <http://www.sfiprogram.org/>

²³ Information on the American Tree Farm System can be found at <http://www.treefarmssystem.org/>

Many corporate forest landowners and other forestry interests finance and support state forestry associations that: 1) provide general education to the public and private landowners; and 2) seek favourable treatment of forestry by state legislatures and state natural resource agencies.

Non-corporate private forest landowner role in forest management

Individual and family forest landowners that are unincorporated are classified as non-corporate private forest landowners. These landowners own 49 percent of United States forest land. Most non-corporate forest land is in the eastern United States. Non-corporate landowners have various ownership objectives, which may include timber production, recreation, wildlife habitat, investment and others. For some, especially those with larger forest holdings, timber production is often one or even a primary objective. Others, especially those with smaller holdings, own forest land primarily for its wildlife, recreational, or environmental amenities and may not be interested in harvesting timber.²⁴

While there are about 11 million non-corporate landowners in the United States, about 62 percent of non-corporate forest land is held by only 6 percent of the landowners, who own forest tracts larger than 40.5 hectares (100 acres) (Butler 2008, p. 55). The other 38 percent of non-corporate forest lands owned by the majority of landowners is in relatively small parcel sizes that can make forest management economically inefficient.

Many of the larger forest landowners employ professional consulting foresters to assist them in planning and carrying out forest management activities.²⁵ Others, especially those with smaller forest tracts, may not use or even be aware of the services provided by consulting foresters, and so deal directly with logging contractors. Experience demonstrates that landowners who employ professional foresters in planning and carrying out timber harvesting usually obtain both a higher price for their timber and their forest stands are left in better condition than those landowners who deal directly with logging contractors. In spite of the benefit to landowners of using professional foresters, more than 50 percent of non-corporate forest owners harvest their timber without their services (personal communication with Brett Butler).

The diversity of landowners' situations and objectives suggests the need for a programme of public education and outreach to non-corporate landowners. Over the years a variety of extension and public educational outreach programmes have been developed to address this need.²⁶

Increasing fragmentation and parcelization are trends that appear to be threatening the future forestry and environmental benefits from private forest lands. This is caused by expanding urbanization and subdivision for residential use (Alig *et al.* 2003). Some tax codes, particularly federal inheritance taxes, may also be contributing to this fragmentation. Another contributor is weak or non-existent land-use planning and zoning regulations at the local and county level.

²⁴ For information on US landowner characteristics and objectives, see: <http://www.treesearch.fs.fed.us/pubs/15758>

²⁵ For more information on consulting foresters and their services visit <http://www.acf-foresters.com/>

²⁶ Federal education and assistance programmes targeted to forest landowners can be viewed at <http://soforex.net/>

Several NGOs, such as the National Woodland Owners Association (NWOA), are organized to represent the interests of non-corporate and family forest owners.²⁷ This association sponsors the Private Landowner Network which provides relevant information to private forest landowners, including information on public assistance programmes available to them.²⁸ The NWOA also operates a small forest certification programme, called Green Tag for private landowners.

Box 1. Summary of Institutional roles of federal, state and private forest sectors

Role of the federal government in forestry

- Manage the national forests, national parks and other federal lands.
- Provide financial assistance to the states for delivery to forest landowners (provide a portion of cost-sharing funding).
- Partially finance and set overall quality standards for national programmes designed to assist in protecting forests from fire, insects and disease.
- Directly carry out forest inventory and assessments on all forest lands.
- Directly carry out forestry research, as well as help finance research at state educational institutions.
- Set policy/standards for air and water quality, pesticide use, protection of endangered species and wetlands management on both public and private lands.
- Provide technical and financial assistance on soil conservation techniques and practices to farmers and forest landowners.
- Directly enforce federal wildlife laws and regulations (dealing primarily with migratory birds and endangered species).
- Establish and enforce worker safety rules for industrial facilities and forest operations (OSHA).
- Assess federal taxes on income derived from forests and federal inheritance taxes on the estates of deceased forest landowners.

Role of state and local governments in forestry

- Direct responsibility for programmes designed to protect forests from fire, insects and disease.
- Regulate use and management of private forests, including zoning, enforcing federal and state standards for air and water quality, etc.
- Direct delivery responsibility for providing financial and technical assistance to forest landowners.
- Manage state forests, state parks and other state, county and municipal lands.
- Enforce state wildlife laws (for resident game and non-game species).
- Forestry education.
- Forestry research through state natural resources colleges and universities.
- Assess state and local income and property taxes on private landowners and corporations.

Role of conservation and environmental NGOs in forestry

- Encourage and promote management of federal and other public lands for amenity and environmental values.
- Encourage sensitivity in timber harvesting to environmental and sustainability concerns (FSC certification).

²⁷ For more information on the NWOA visit <http://www.woodlandowners.org/>

²⁸ <http://privatelandownernetwork.org/yellowpages/resource.asp?id=9610>

- Advocate passage of legislation addressing biodiversity, air and water pollution and related environmental issues and assure its effective implementation by enforcing agencies.

Role of the corporate forest landowners

- Manage some of the most productive forests for timber production.
- Encourage improved management of non-corporate private ownerships, including certification (American Tree Farm System).
- Finance and support state forestry associations that: 1) provide general education to the public and to private landowners; and 2) seek favourable treatment of private forestry by state legislatures and state natural resource agencies.

Role of non-corporate private landowners

- Manage 49 percent of forests for a wide variety of management objectives, including timber, wildlife, recreation, watershed protection and other uses.

Taxes on private forest landowners

Along with stable and secure land tenure, taxes have a significant effect on management of, and investment in, private forests. The primary taxes in the forest sector include federal and state income taxes, inheritance taxes and state and local property taxes. Both corporations and individuals are subject to taxes assessed on income. Income taxes on individuals and households are progressive in that the marginal tax rate increases with income. Inheritance taxes are assessed on the estates or property of deceased individuals. Property taxes are collected locally on the assessed value²⁹ of forest land and, sometimes, of standing timber. Income tax codes and many local property tax codes give recognition to the long-term capital nature of timber expenditures by providing some preferential treatment for such investments.

Generally speaking, federal income tax treatment for forestry operations is the same as would apply to other business income and expenses. Income from the sale of timber is generally treated as a long-term capital gain that is taxed at a lower rate than ordinary income. Thinning and similar stand improvement expenses can either be deducted from the landowner's taxable income in the year incurred (as a current maintenance expense) or capitalized into the cost of the timber and deducted when it is sold (Haney *et al.* 2001). Federal law also provides for special treatment of up to US\$10 000 per year of expenses for reforestation, as well as other tax benefits from qualifying management expenses (Haney *et al.* 2001). This tax benefit seems to have performed as effectively as direct financial assistance to encourage private landowners to reforest their lands even though receiving technical assistance is not required to obtain its benefits (Moulton *et al.* 1993). One problem, though, is the apparent lack of awareness by many landowners as to the existence of this tax benefit (Sampson and DeCoster 1997).

Annual property taxes can have a significant effect on investment in private forest land because they are due every year, while income from forests is generally received periodically. In the past, local tax codes often based property taxes on the combined value of

²⁹ The 'assessed value' of land and timber is often a percentage of its actual value. That percentage varies according to taxing jurisdiction.

land and timber, and so landowners were implicitly encouraged to cut timber prematurely to reduce their tax burden. This situation, combined with the possibility that taxes might rise substantially during a managed forest rotation, created disincentives for reforestation and other investments in private forests. In response, many states and local units of governments have modified their tax codes to encourage investment and reduce the incentive for premature harvest. Some states now base timberland taxes on bare land values, taxing the timber only upon harvest. Other states tax forest land at fixed rates or based on its estimated productivity regardless of the value of the standing timber.³⁰

There are some state and local tax provisions that encourage private landowners to make investments in their timberland. For example, most states encourage the maintenance of open space and rural and forested landscapes by providing special or preferential tax treatment for these uses. Many of these states have provisions that allow for taxing agricultural and forest lands on the basis of current use, rather than an assessed highest use value if subdivided as residential or commercial property. Most such tax-advantaged programmes contain substantial penalties if landowners enrolled in them decide to convert their land to residential or commercial uses.

Historic investment climate in the forest sector

The favourable forest situation summarized earlier has been the result of some fortuitous events over the past 100 years, but also is the result of public policies aimed at protecting forests and improving the climate for investments on private lands. Some of the primary factors include (but are not limited to):

1. Agricultural productivity per hectare increased more rapidly than population, which reduced or eliminated the need for additional agricultural clearing.³¹
2. Stable and well-defined institutional frameworks for land tenure and land rights systems, backed up by the rule of law.
3. Strong and relatively consistent markets for forest products discouraged conversion to non-forest land uses.³²
4. Taxation and regulatory systems that recognized the long-term nature of investments in the forest sector.
5. Strong agricultural and forestry institutions supported information delivery at the national, state (provincial) and local levels including: a) research and extension on forest management; b) long-term commitment to forest inventory and assessment; and c) effective emergency response systems to address wildfire, insects, disease and other natural events.
6. Increases in per capita income and other measures of economic strength and diversity encouraged investment in the forest sector and resulted in citizens that value forests for their non-timber and environmental benefits.

³⁰ For online information on US income and property taxes on private forests visit <http://www.timbertax.org/>

³¹ Between 1850 and 1910, US forests were being cleared for agriculture at the rate of almost 3 500 hectares, or over 13 square miles, per day.

³² The real price of lumber (adjusted for inflation) has risen steadily since 1800, increasing four times since 1900 (Howard 1999); while the real prices of most competing materials were declining during this period. Since the 1970s, the real price for lumber has fluctuated, but the trend has generally been flat. Weak agricultural commodity prices have also encouraged the conversion of cropland and pasture back to forest (Howard 2007).

Stable and secure land tenure has encouraged investment on private lands to the extent that most forest products are harvested on such lands. The risk is low that forest products contain any significant proportion of illegal wood. For the past three years, the United States has ranked in the top tenth percentile of countries for regulatory quality, rule of law and control of corruption (World Bank 2008), helping to create a positive investment climate (Seneca Creek Associates 2008).

Factors affecting current investment attractiveness in the forest sector

The forest sector currently faces a number of significant challenges. These include: 1) sustaining and enhancing the global competitiveness of the forest product industry; 2) addressing the loss and fragmentation of private forest land caused by urban expansion and seeking to create incentives for private forest landowners to maintain, protect and manage their forests; 3) addressing biological threats to forests from introduced exotic species and climate change; 4) forging a social consensus on the use and management of public forests, particularly federal forests, to assure that their environmental, social and economic values are protected; and 5) seeking to reconcile national consumption of resources with public preferences for protecting environmental values, addressing global climate change and managing forests and other natural resources sustainably.

The following paragraphs describe some developments over the past two decades that pertain to the challenges listed above.

Devolution of the integrated forest product industry

Solid wood products and paper firms were formerly significant owners of privately held timberland in the United States, having built up their landholdings earlier in the twentieth century. For example, in 2000 the International Paper Corporation was the largest holder of American timberland, with 4.8 million hectares (12 million acres) (North American Pulp & Paper 2001 Factbook 2002). Since the mid-1990s, integrated forest product companies (industrial landowners) have sold most of their land and these large-scale timberland ownerships have been restructured into TIMOs or REITs, which are primarily managers and holders of timberland for institutional investors. This shift occurred, in part, due to changes in the tax code that: 1) are unfavourable toward integrated forest product industry ownership of timberland (by taxing both stumpage revenues and corporate dividends); and 2) provide favourable tax treatment to the new institutional owners – TIMOs and REITs – which are not enjoyed by integrated forest product companies (Binkley 2007; Mendell *et al.* 2008).

Institutional investors (e.g., pension funds) were attracted to timberlands in order to diversify their holdings and because timberland investments produce competitive rates of return and are considered low risk (Binkley 2007). Investors appear to prefer TIMOs and REITs over traditional integrated companies for industrial timberland investment, because they are ‘pure’ timberland investments (Mendell *et al.* 2008) that also offer substantial tax advantages.

Publicly available data on this ownership transition are hard to find, but industry sources suggest that large corporate timberland transactions amounted to 21.4 million hectares (53

million acres) from 1995 to 2008 (RISI) and were comprised mostly of acquisition by TIMOs or REITs. Figure 3 shows expansion of timberland assets held by TIMOs and REITs from the 1980s to 2005 (note that TIMOs represent the largest and most rapidly increasing share of this group). In 1997, integrated forest product companies, which owned 27 million hectares (67 million acres) of productive non-reserved forest land, as well as processing facilities, accounted for about 30 percent of timber harvest volume (USDA/Forest Service 2008b). Today, most of these lands have been sold and that timber harvest volume is produced by TIMOs and REITs.

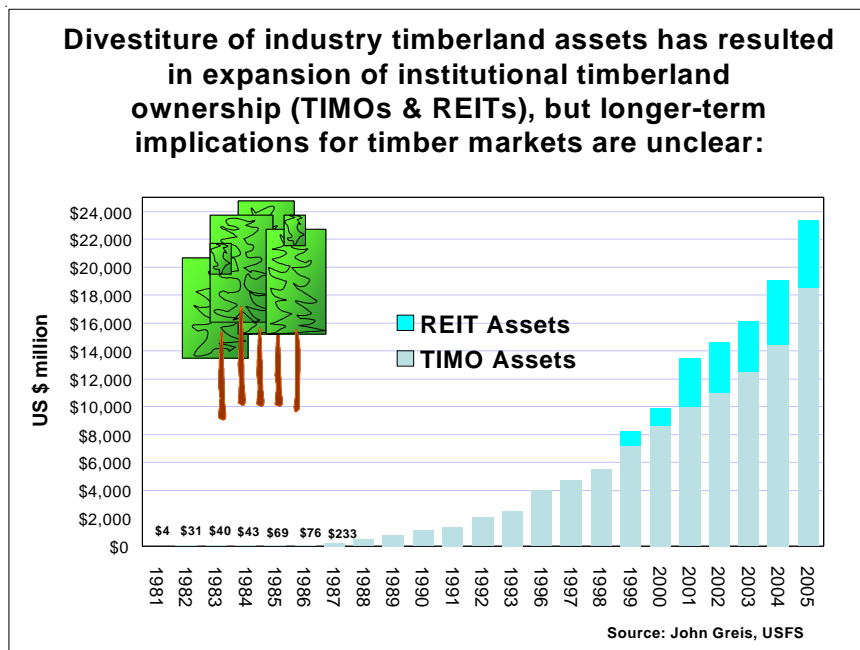


Figure 3. Divestiture of forest land by integrated forest product companies

This change in corporate structure affected the joint ownership of processing facilities and timberland. TIMOs do not directly own land; instead they manage land for their investors, often for investment periods that are less than a forest rotation in length. REITs own forest land but few processing facilities.

For TIMOs and REITs, fiduciary responsibility to their investors will generally focus their short- and long-term priorities on maximizing economic returns from land (this is the so-called ‘highest and best use’ concept commonly cited by TIMOs and REITs). The highest and best use approach does not necessarily result in the same timberland use that was realized under the former forest industry landowners whose primary interest was to sustain long-term timber supply to the wood mills of the parent company. Many TIMOs are required to turn over their properties every ten to fifteen years. When they do so, they usually sell in smaller parcel sizes to increase their returns. Over time, this practice is likely to become self-defeating because returns on managing smaller parcels for timber are inherently lower due to reduced economies of scale (Binkley 2007).

It remains unclear what the economic consequences of this massive ownership change will be in terms of sustaining timber supply or timber management in the long run. These changes have led to the widespread sale of productive timberland, including subdivision of land into small parcels for development, increasing forest fragmentation across the United States (Binkley 2007).³³ While conservation groups have acquired and protected some lands from these transactions, much of the forest land adjacent to urbanized areas is being developed or is vulnerable to development.

While the divestment of forest industry timberland was stimulated in significant measure by corporate tax regulations, it was also associated with a decade of downsizing in production capacity and corporate restructuring in the forest product industry. Economic globalization and structural changes (consolidations and mergers) resulted in refocusing or realignment of corporate objectives away from timberland management. Total timberland returns (both annual timber and land value appreciation) began to decline in the late 1990s along with wood fibre prices, and timberland returns bottomed out in the 2001-2002 economic recession (Figure 4).

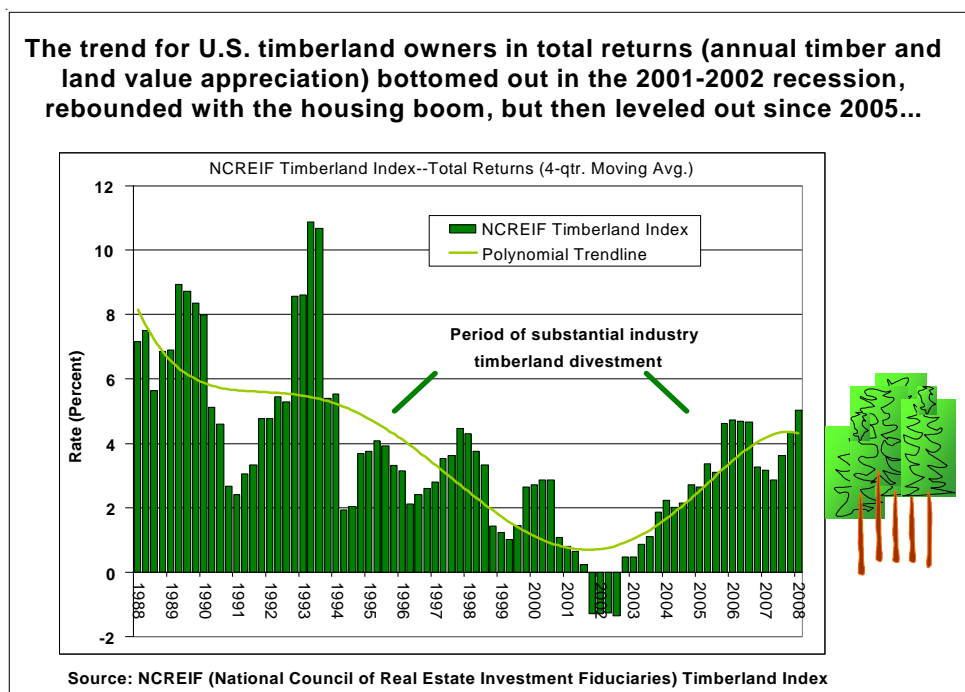


Figure 4. Trends in returns for timberland owners

Thus, changed tax regulations, diminished forest product demands and prices and diminished timberland returns, were all elements in the massive shift of timberland ownership and investment.

³³ The TIMOs and REITs often have contractual obligations to supply timber to the mills of the former industrial timberland owners, but those contractual obligations usually have term limits and also are not attached to the land title (so the land, in many cases, can be subdivided and sold to new owners without contractual timber supply obligations).

The forest products processing sector

The restructuring of integrated forest product companies discussed in the previous section affected the forest products processing sector. Another significant effect was the substantial decrease in timber production from federal lands. A major influence on national forest product processing is the increasing globalization of commerce. The United States domestic processing industry is a relatively high cost producer compared to growing international processing capacity, reflecting higher wages and increased expenses associated with environmental compliance.

Overall, the United States share of domestic markets fell by 29 percent from 1995 to 2001 (Collins *et al.* 2008). Import competition has the greatest effect on labour-intensive processing facilities, such as furniture manufacturing (see Figure 5; Ince *et al.* 2007). Between 1989 and 2002, Chinese wood furniture exports to the United States grew at a compound rate of more than 30 percent per year (Buehlmann *et al.* 2003). Between 1997 and 2006, employment in the national non-upholstered wood furniture industry decreased 44 percent from 127 703 to 71 544 workers (USDA/Forest Service 2008a; p. 2-92). What remains of the furniture sector is implementing changes, such as outsourcing and increased use of automation, in order to remain competitive (Ince *et al.* 2007).

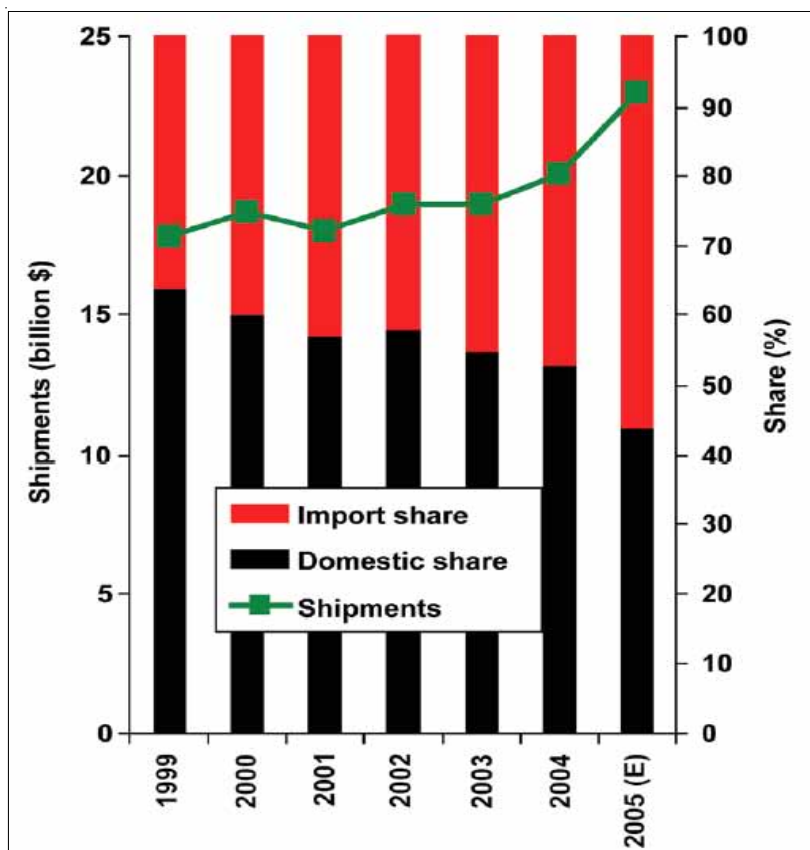


Figure 5. Decline in the domestic wood furniture industry (Ince *et al.* 2007)

Changes in the forestry sector due to globalization are expected to continue into the future (Bael and Sedjo 2006). Figure 6 shows the decline from 1965 to 2005 in the share of lumber consumption that was produced domestically. Timber harvest across the United States is expected to increase in the coming decades less than in recent decades (prior to the 1990s) due primarily to increased use of imported forest products and an increase in paper recycling (Ince *et al.* 2007). Although timber harvest in the United States increased steadily for decades in the latter half of the twentieth century, it has not increased significantly since 1989. Indeed, United States timber production (or annual harvest) has been estimated to have reached an historical peak at 444 million m³ (15.7 billion cubic feet) in 1989 and has remained on a plateau lower than that peak, at around 425 million m³ (15 billion cubic feet) through 2005 (Howard 2007; Table 5a).

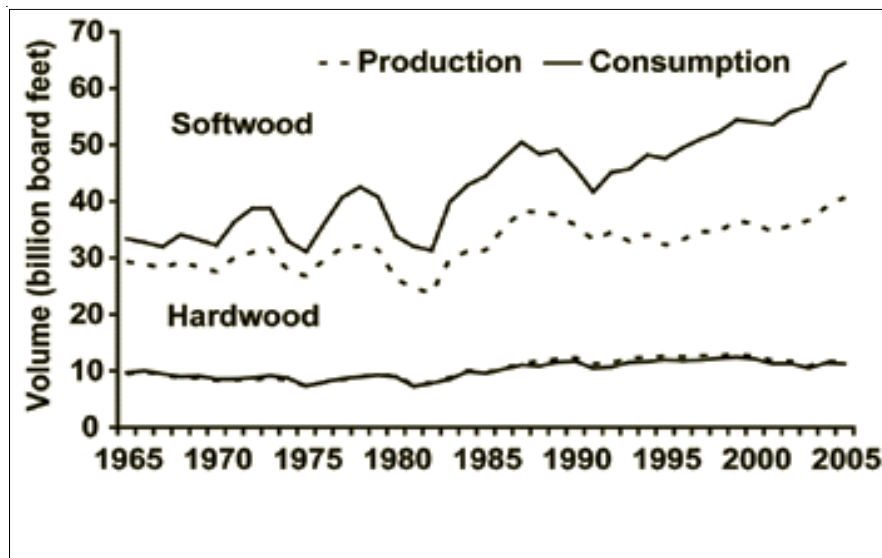


Figure 6. Domestic lumber production and consumption by wood type (Howard 2007)

Even growth in the more capital-intensive pulp and paper sector has shifted from the United States to Europe and Asia. Figure 7 illustrates the growth by decade in paper and paperboard output for North America, Europe and Asia, which collectively account for 92 percent of global paper and paperboard production (based on FAOSTAT data³⁴). While over the past decade growth subsided in North America (the United States and Canada), growth continued in Europe and Asia.

In spite of this shift, private industry is still making capital expenditure investments, which are necessary to remain competitive. Forest product facilities which rely more on capital-intensive infrastructure and less on labour, such as pulp and paper or larger forest product mills, have been better able to weather the increase in import competition (Ince *et al.*

³⁴ http://faostat.fao.org/Default.aspx?404&eid=faostat_rb_error_172c6c2a66bd4ed0a4db6b9301b87f46

2007).³⁵ While the number of softwood lumber mills decreased overall in the last decade, the average capacity of surviving mills increased by 60 percent (Ince *et al.* 2007).

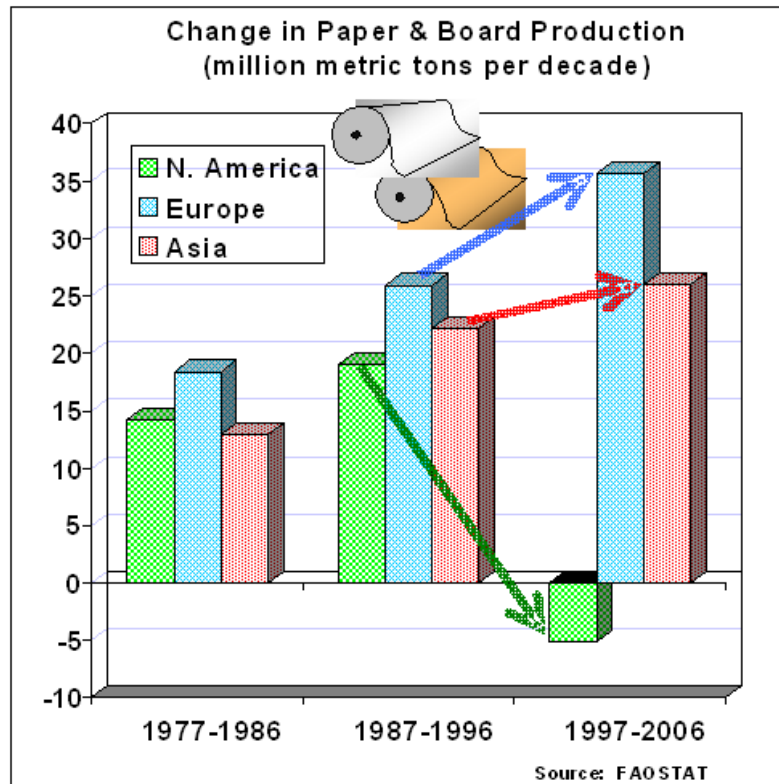


Figure 7. Change in paper and board production (FAOSTAT)

Private forests

Private companies and individuals own 69 percent of productive forests in the United States but produce 92 percent of the timber harvested (Table 1) (USDA/Forest Service 2008b). In the future, a high proportion of current and projected timber harvest will come from the relatively smaller area of forest land that consists of managed plantations. While the area of private forest land has been stable since the 1930s, this is not likely to continue. The total private forest land area is expected to decrease by 2050 by up to 9.3 million hectares (23 million acres) due primarily to property fragmentation and conversion to other uses (Alig *et*

³⁵ Capital investment in wood product industries decreased from US\$3.4 billion in 1997 to US\$2.2 billion in 2003, but increased to US\$3.5 billion in 2006 (all in 2005 US dollars). Capital investment in paper product industries declined more – from US\$10.2 billion in 1997 to US\$5.3 billion in 2004, but increased to US\$7.4 billion in 2006 (all in 2005 US dollars). Capital investment in the wood furniture industry was US\$837 million in 1997 and US\$873 million in 2002. Capital investment in the logging industry was US\$0.9 billion in 1997 (2005 US dollars). (Quoted from USDA/Forest Service 2008a, pp 2-88.)

al. 2003). This trend is magnified in certain regions, especially the southeast (Southern Forest Resource Assessment 2002).

Though there is much diversity in the types and motivations of private landowners, they can be divided into two general categories: corporate forest landowners and non-corporate forest landowners.

Corporate forest landowners

Corporate forest landowners include TIMOs and REITs, as well as land owned by family corporations. Many, if not most, corporate forest lands are managed to produce commercial timber, but management intensity and land productivity vary among these owners.

The acreage of industrial plantations has increased dramatically in the past few decades as intensively managed plantations become more profitable than forestry operations in natural forests. Plantations are generally composed of native trees grown on shorter rotations. This shift is exemplified by the movement, in the 1980s, of the focus of timber production from natural forests in the Pacific Northwest to plantation-based timber production in the southeast and Pacific Northwest. Between 1990 and 2005 the United States went from having 10 percent to just over 15 percent of worldwide forest plantations (Bael and Sedjo 2006). About 45 percent of the tree planting is done by corporate landowners (Sedjo 2008). The focus on plantations has encouraged more systematic genetic selection and breeding of native tree species and has reduced the footprint of land needed to produce an equivalent amount of forest products, possibly reducing the total acreage used for production of forest products (Sedjo 2008).

The Forest Service projects that plantations, which produced about 4 percent of softwood timber harvest in the 1980s, will be the source of over 55 percent of domestic softwood timber harvest by 2050 (Figure 8) and will constitute about 9 percent of national forest land at that time (USDA/Forest Service 2003). This assumes that the area of managed plantations will continue to increase in the future as it had in the past. Most of the significant capital investment in expanding the area of managed plantations since the 1950s took place in the period when the corporate timberlands were owned primarily by integrated forest product firms (e.g., prior to the mid1990s). It remains to be seen whether the new class of corporate timberland owners (TIMOs and REITs) will make investments in timber production as was done by integrated forest product companies. It is unclear whether they will have sufficient capital resources or the inclination to continue expanding or maintaining plantation-based timber production, including private investments in silviculture and tree genetics that were funded largely by integrated forest product companies.

As existing processing facilities increasingly become specialized and concentrated in a few locations associated with plantations, the economic viability of managing natural forests for wood products could be adversely affected. Indeed, the latest Forest Service assessment indicated that growth in timber demand would slow down relative to the growth of past decades and also there would be continued expansion in plantation-based timber supply. Thus, the harvest of softwood timber is projected to be reduced on the remaining bulk of timberland, i.e., softwood timber harvest from natural forests will likely decline in the decades ahead (USDA/Forest Service 2007b).

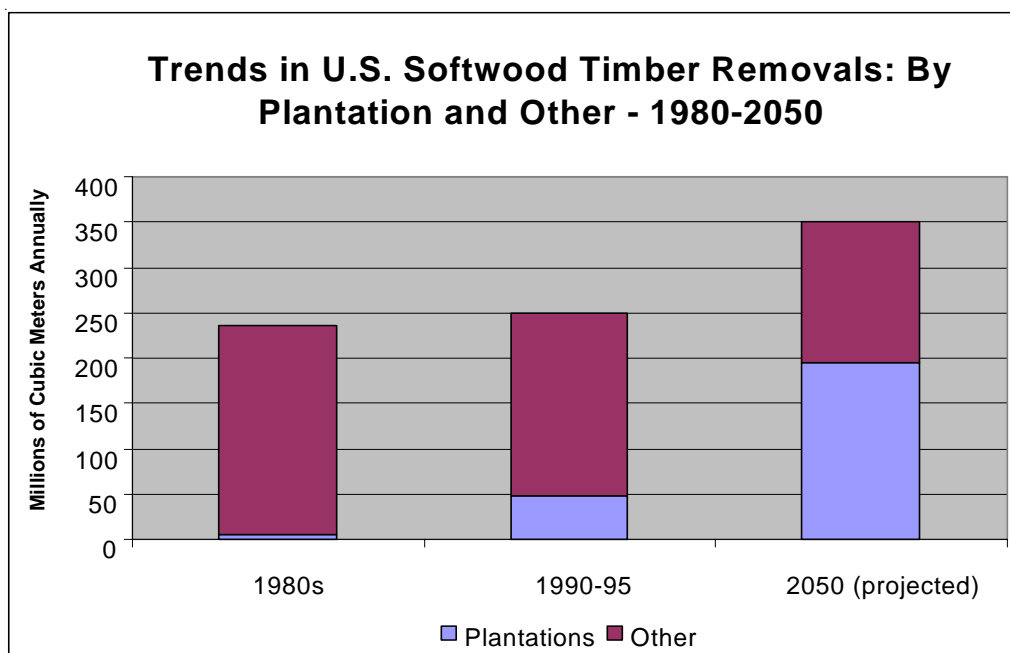


Figure 8. Trends in softwood timber removals (USDA/Forest Service 2003)

In this context, it is likely that existing processing infrastructure in areas once served by a more decentralized forest industry based on timber from natural forests will deteriorate. This is likely to drive down the value of timber from natural forests, especially those distant from processing facilities, and reduce economic incentives for managing natural forests for wood products.

Non-corporate landowners

Development pressures affect small private landowners, many of whom are increasingly under financial pressure to sell their parcels for development. Fourteen percent of family forest owners are considering selling or transferring some or all of their land in the next five years (Butler 2008).

Over the years there have been a variety of federal and state programmes designed to assist non-corporate landowners. These range from education and technical assistance to financial assistance, quite often in the form of sharing the cost of qualifying activities, such as reforestation or erosion control (Ellefson *et al.* 2005). The large number and complexity of public assistance programmes and their qualifying criteria can be confusing to landowners. The U.S. Forest Service provides online information on assistance available to private forest landowners,³⁶ as do most states.³⁷ The Private Landowners Network is an example of an NGO effort to provide online information to landowners about the public assistance available to them in their specific states.³⁸

³⁶ <http://www.fs.fed.us/spf/coop/programs/loa/index.shtml>

³⁷ <http://www.stateforesters.org/>

³⁸ <http://www.privatelandownernetwork.org/>

Non-corporate landowners consistently identify taxes as significant factors in their management decisions. The tax code contains some preferential treatment for forestry investments. States generally understand the role of taxes in sustaining a viable forest-based economy and every state has at least one tax benefit that attempts to keep private forest land forested (USDA Forest Service 2004).

As the average age of non-corporate forest land owners increases, estate or inheritance taxes become an issue when passing the land on to the next generation. If the next generation is not interested or is unable to afford to manage the land as forest, an increasing amount of private forest land will be developed. Many landowners view federal estate taxes as contributing to the fragmentation of private forests. In addition, 29 states impose an estate or inheritance tax (Kilgore and Ellefson 2002). When a landowner dies, the heirs are often forced to sell off portions of the forest holding or to prematurely harvest the timber to pay the inheritance tax obligations (Sampson and DeCoster 1997).

Major changes in federal estate tax provisions were made in 1997 and 2001, which, among other things, raised the value of an estate that would be subject to estate taxes and reduced the applicable tax rates (Ellefson *et al.* 2005). These changes likely substantially reduced the effects of estate taxes in leading to premature harvest or land sales. However, at the end of 2010, these provisions are scheduled to sunset (Ellefson *et al.* 2005). While Congress is expected to intervene in some manner, the details are yet to be written. Even so, careful planning is needed for a landowner to navigate the complexities of the federal, state and local tax codes. Here again, online help is available to non-corporate forest landowners (<http://www.timbertax.org/>).

Public forests

Between 1950 and 1960, the Forest Service, the BLM and many state forest agencies began to gear up to meet exploding demands for timber in response to a post Second World War housing boom in the United States. From 1960 to 1985, these public lands were managed with a substantial emphasis on producing timber to support both local communities and American wood consumers (about 20 percent of softwood timber production originated from federal lands during this period).

But the demands for other uses and values of public lands also exploded during this period, creating a climate of intense controversy, especially after 1970. Since 1985, there has been a dramatic shift in the mission of many of these lands, and the managing agencies are now largely focused on restoring and maintaining healthy ecological conditions and meeting the recreational and amenity preferences of local and national stakeholders.³⁹ National forest timber sales have declined by more than 80 percent since 1985 and now provide less than 2 percent of timber consumption (Figure 9). Currently, all public lands combined provide about 8 percent of the timber harvest.

³⁹ For a discussion of the various factors leading to this change, see the US paper in the APFC publication *Re-inventing forestry agencies: experiences of institutional restructuring in Asia and the Pacific*. RAP Publication 2008/05. Asia-Pacific Forestry Commission (<http://www.fao.org/docrep/010/ai412e/ai412e00.htm>).

Although there was a great national debate in the 1980s about harvesting timber on the federal forests at the expense of other amenity values, that debate has now shifted largely to areas adjacent to federal lands. Former Forest Service Chief Dale Bosworth recently wrote that “structural shifts in timber production and markets were quietly bypassing the public debate” by reducing the economic attractiveness of national forest timber, citing the most recent Forest Service timber assessment (Haynes *et al.* 2007) and impacts of economic globalization on timber demand (Bosworth and Brown 2007).

In areas with a large proportion of public land, the reduction in federal timber sales in the 1980s substantially affected the forest products industry and economic foundation of communities adjacent to these lands, and led to a substantial loss in timber-processing facilities. Thousands of jobs were lost as processing mills closed across the West, especially in the Pacific Northwest, and timber production moved to Canada and the southeastern United States.

About the same time as the timber harvest reductions, federal lands in the western United States experienced an increase in uncharacteristically severe wildfire and insect and disease epidemics due to droughts and overly dense forest stands (GAO 1999; Arno and Allison-Bunnell 2002; Schmidt *et al.* 2002; Allen 2004). Federal land managers estimate that over 40 million hectares (100 million acres) of federal forest lands are at unnaturally high risk of catastrophic wildfires and large-scale insect and disease outbreaks because of unhealthy forest conditions (Senate Agriculture Committee 2003). A major expansion of residential development into rural areas, often adjacent to national forest lands, has increased the level of risk associated with wildfires. An increasing awareness in local communities has created growing local constituencies supporting active thinning and restoration of forests to reduce the risk of uncharacteristically severe wildfires.

Thinning and controlled burning are critical management tools to restore and improve the ecological resiliency of many forests on federal lands (Arno and Fielder 2005). Yet the decline in the forest industry adjacent to many federal lands has substantially diminished the capacity to treat these stands through commercial operations. That decline and loss of capacity continues and is adversely affecting both the ability of federal land managers to maintain healthy forest conditions and the economic viability of local communities adjacent to these lands.

Re-investment in efficient processing facilities adjacent to federal lands in the West is hampered by the fact that: 1) many of these lands are in remote areas; 2) the material now being harvested from these lands is largely small diameter, low value material from thinnings; and 3) the flow of this small diameter material tends to be inconsistent and unreliable.

Lessons learned, recent developments and recommendations on policies that could improve the investment climate in the forest sector

With respect to private lands, experience in the United States suggests that the most important factors leading to sustainable management include: 1) reliable and relatively consistent markets for forest products; 2) secure and stable land tenure policies; 3) tax policies that reflect the long-term nature of forestry investments; 4) effective programmes

to reduce the risk of losses from insects, disease and wildfire; 5) the availability of technical and (sometimes) financial assistance to small landowners; and 6) a regulatory context that is sensitive to the needs of forest landowners.

Experience suggests that, in addition to consistent markets for forest products, one of the most important policy elements affecting investment in, and management of, private sector forests is land tenure rights and stability. Forest investments are, by their nature, long-term commitments, and are secured primarily by the promise of future return. Land tenure rights that protect the ability of private landowners to realize financially competitive returns from those investments have been critical to attracting private forest investments in the United States and other countries with significant private forestry sectors. In addition to clear forest tenure rules, it is critical that landowners have a perception of forest tenure stability as well as security.

It is also clear from experience that forest protection (from wildfire, insects and disease), research and extension, and forest inventory and assessment are key government roles that set the stage and conditions that enable and encourage private investment in forests. In recent years, the U.S. Forest Service has spent about US\$2 billion annually in a variety of forest protection activities. The bulk of this (averaging US\$1.8 billion annually) is wildfire management (fire preparedness, suppression, thinning, fire research and related activities), with the remaining amount devoted to insect and disease protection on federal and non-federal lands. About US\$600 million is spent annually on forest-related research in the United States (federal and state levels) (USDA/Forest Service 2008a p. 2-90).

Information on the area and condition of forests is also important both to sustainable management and to private investment. The U.S. Forest Service has conducted a national forest inventory system on all forest lands since the 1930s. This system has improved over time to obtain information on an ever larger suite of conditions and measurements. This Forest Service responsibility was expanded in the 1970s by a Congressional statutory charge to carry out periodic national assessments of renewable resource conditions and their demand and supply situation.

Experience suggests that policy centralization at the federal level does not necessarily mean effective coordination, especially when it is not coordinated with market-based policies nor focused on sustaining competitiveness of the forest sector in the global economy. The new federal agencies created out of the 1970 environmental legislation, and the existing agencies that were given additional responsibilities from it, sometimes have had substantial difficulties in developing coordinated environmental and natural resource policies. This has resulted in sometimes cumbersome and redundant process requirements imposed by environmental regulatory agencies on federal land management agencies, state governments and private landowners.

Challenges facing the forest sector

Even though the forest sector is the beneficiary of strong domestic markets for forest products and a generally favourable institutional environment, the long-term future of the forest products industry in the United States is far from certain. The positive effect of strong property rights and other institutional benefits is offset by high labour and environmental compliance costs and the loss of forest land to alternative uses. Significant

challenges exist, including the difficulty of profitably providing products from domestic forests to domestic markets which are also supplied by low-cost products from abroad.

Since 1989 annual timber production has essentially stagnated at around 425 million m³ (15 billion cubic feet), although the forests are certainly capable of supplying much greater volumes. In addition to high labour and environmental compliance costs, factors potentially leading to a decline in the forest product sector in the United States include:

1. A sharp decrease in timber supply from public lands (Figure 9).
2. The re-organization of the integrated forest product industry, which over time will likely reduce the area managed for timber production and is likely to result in substantial acreage of forest land moving into second homes and other non-timber uses.
3. Increased urbanization and parcelization of private forest lands, which reduces the likelihood that the property will be managed for timber production.
4. A decline in research focused on maintaining a globally competitive forest sector.
5. The unintended effects of agricultural subsidies acting to maintain marginally productive lands in agricultural uses rather than moving to forest uses.

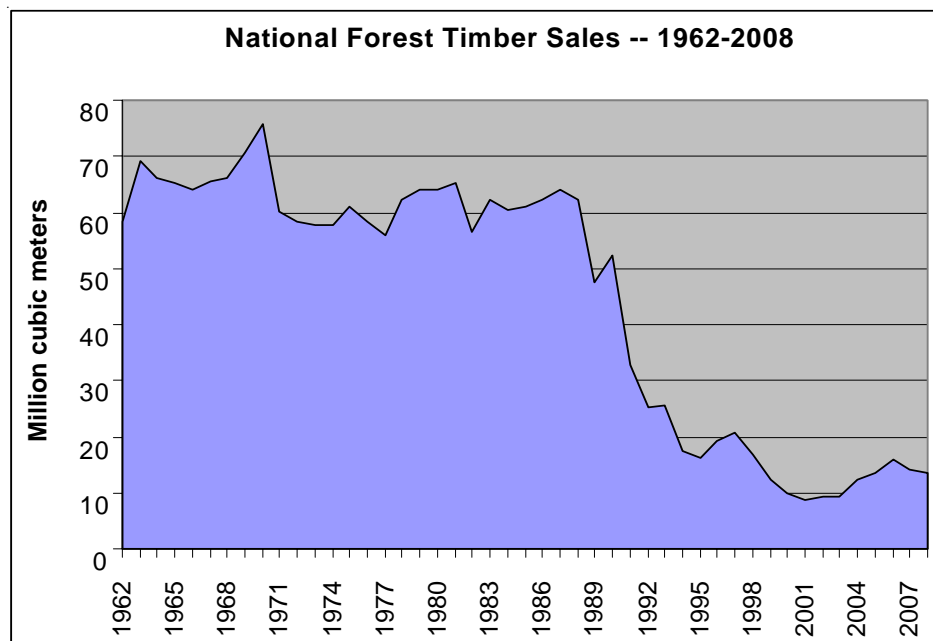


Figure 9. USDA forest service timber sales, 1964-2008 (Cut and Sold Reports 2008)

There is virtually no establishment of new forest plantations on agricultural or other non-forest land in the United States. In contrast, both Asia and South America are rapidly establishing high quality, fast-growing plantations and making significant investments in state-of-the art processing facilities (Binkley 2007).

The United States invests a relatively small amount in research designed to support a globally competitive forest sector, compared to other developed countries with a significant forest sector such as Canada, Finland and Sweden (USDA/Forest Service 2008a; Dovetail Partners 2008). This is a significant barrier to forest sector competitiveness. In the past, the forest products industry engaged in research and development, aimed mostly at increasing the yield and productive capacity of forest lands, but also at mitigating soil, water and other environmental effects of management activities. In 2002, the forest industry employed about 124 full-time equivalents in research and extension personnel (90 percent in research). This represented about 6 percent of all forestry research personnel and a much larger percentage of the research aimed at solving practical problems (unpublished Forest Service report). With the disintegration of the integrated forest products industry, much of this research capacity has collapsed. In addition, publicly funded research has moved into areas not related to maintaining a competitive forest products industry (Binkley 2007).

Some of the research devoted to developing fast-growing commercial trees that was formerly carried out by integrated forest products companies is now being done by Arborgen. Arborgen, headquartered in Summerville, South Carolina (formerly the site of Westvaco's tree genetics research laboratory), was formed out of the American-based nursery and seed orchard operations of International Paper and MeadWestvaco, and that of Rubicon Limited in New Zealand and Australia.⁴⁰

Currently, considerable public and private research is conducted on cellulosic ethanol. Although cellulosic ethanol has garnered much attention, it is not the only biofuel that could be produced from wood. Indeed, a recently completed, major European study of biofuel alternatives, funded by the EU, concluded that it would be more competitive in the long run to produce diesel or similar fuels via biomass gasification and Fischer-Tropsch synthesis.⁴¹

More broadly, there are other forest products offering yet higher revenue that can be produced from small-diameter trees, such as mechanical pulp and oriented strand board (OSB). However, there is little if any coordination or focus of efforts on identifying technology development pathways that afford the greatest economic returns to forestry or the greatest good in terms of sustaining global competitiveness of the forest sector. Currently, wood pellet, pulp and OSB producers all use wood residues. Mill capacity in the United States has decreased causing these industries to compete for a limited supply. Significant expansion of biomass for energy will require the use of additional sources of woody biomass (such as biomass produced from fuel treatments), which may make the feedstock more expensive.

A major problem is that forest sector competitiveness has not been subject to systematic policy attention in the United States, whereas it is a prominent focus of public policy in other competing countries, particularly in Europe, Asia and Canada, and for agriculture in the United States.

⁴⁰ Arborgen's Web site is at <http://www.arborgen.com/>

⁴¹ <http://www.RENEW-fuel.com>

Potentially positive factors

The factors described in ‘challenges facing the forest sector’ could well portend a long-term decline in the level of wood product harvest and a further decrease in the American forest products industry. These factors could be partially offset by: 1) increasing the productivity of intensively managed timber plantations in the United States (Figure 8); 2) the proximity of forest land to significant population centres and the markets for forest products that they provide; and 3) expanding opportunities for globally competitive products, such as biofuels, engineered wood products and energy-efficient materials.

Emerging issues that could improve the investment climate in the forest sector include: 1) expansion of the certified land base; 2) the role and effect of ecosystem services markets (including carbon credits); 3) the use of woody biomass as an alternative energy source; 4) more information about the energy and other environmental benefits of using wood products compared to alternative materials; and 5) the expansion in the use of conservation easements as a tool to maintain working forests.

Certification

Forest products certification emerged in the United States in the 1990s. There are two main certification systems operating nationwide – the FSC and the SFI. The area of forests certified by the FSC and SFI has increased from virtually zero in 1998 to over 24 million hectares (60 million acres) (USDA/Forest Service 2007c). About 5.7 million hectares (14 million acres) of state-owned lands have been certified, mostly to both FSC and SFI standards. In addition, about 11 million hectares (27 million acres) are certified under the American Tree Farm System, a certification programme tailored to family forest owners (USDA/Forest Service 2007c). Because a price premium is only now beginning to emerge in some markets for certified wood, certification systems are not as popular in the United States as they may one day become (Sedjo 2008).

Interest in certification programmes has recently increased due to green building rating systems and purchasing policies that favour certified products. In addition, forest certification is a component of some protocols to participate in emerging carbon markets for forest land. Price premiums are beginning to emerge with this increased demand for certified products and some producers are finding certification necessary to maintain a presence in certain markets. Whether or not price premiums can be sustained as more certified products are produced is still an open question.

The role of forests in addressing global climate change

Rising concerns for addressing climate change could affect the forest sector in a variety of ways. The Society of American Foresters recently released a major report on the implications of climate change to the U.S. forest sector (Malmsheimer 2007).⁴² In October 2008, the U.S. Forest Service released its strategic framework for responding to climate change (USDA/Forest Service 2008d).⁴³ The forest products industry should be well positioned in an era in which a low carbon footprint could become a competitive advantage (Minor and Perez-Garcia 2007).

⁴² The SAF Climate Change Task Force Report can be viewed at http://www.safnet.org/jof_cctf.pdf

⁴³ <http://www.fs.fed.us/climatechange/documents/strategic-framework-climate-change-1-0.pdf>

Three of the several emerging issues related to addressing climate change are: 1) the role of forests in sequestering carbon; 2) expanding the use of wood for energy; and 3) the use of wood as an energy-efficient building material.

Forests and carbon sequestration

As forests are a large carbon sink, climate change may present opportunities for the forest sector (Aulisi *et al.* 2008). Because forest growth exceeds removals, forests nationwide currently sequester about 10 percent of United States greenhouse gas emissions (Birdsey *et al.* 2006). This could be increased somewhat through forest management activities. Even with an increase in sequestration in forests and increased use of biofuels, a significant reduction in United States carbon emissions will be needed to reduce overall national contributions to global atmospheric carbon, as well as to achieve other desirable social objectives (Bowyer 2007).⁴⁴

Currently, the United States does not have a national carbon tax or mandatory cap-and-trade system for CO₂. In the absence of a national mandatory cap-and-trade system, several state, regional and voluntary cap-and-trade systems have emerged, for example: 1) the Chicago Climate Exchange is a market in which numerous corporations have made voluntary, but legally binding commitments to reduce their emissions; 2) California is developing a cap-and-trade system for the state; and 3) the Northeastern states launched a cap-and-trade system called the Regional Greenhouse Gas Initiative. Each of these markets trade in carbon credits, though accounting rules, verification standards, and inclusion of forest-based offsets vary from system to system.

The real effects of carbon markets on the United States forest sector cannot be evaluated until federal legislation is enacted. If cap-and-trade legislation is passed, many technical challenges will remain. Dealing with issues of additionality and leakage in forest-based carbon protocols will be complex and difficult (Ruddell *et al.* 2007). There are also potential conflicts between carbon sequestration objectives and other resource management objectives (Ray *et al.* 2009).

Use of wood for energy

From the early 1600s until the 1880s, when it was superseded by coal, wood was the primary energy source in the United States. Today, biomass provides about 3 percent of energy production – more than hydropower (Energy Information Administration). In recent years, there has been enormous interest in expanding the use of wood and other biobased fuels, both to reduce dependency on imported oil and to reduce overall carbon emissions (Sample 2008; Malmshiemer 2008).

Studies have shown that there is a substantial forest biomass resource potentially available (Perlack *et al.* 2005). In addition, there is a potential synergy in restoring healthy forests on both public and private forest lands by thinning, removing small diameter material and producing carbon neutral energy from biomass (BRDB 2008; Polagye *et al.* 2007).

⁴⁴ Various information on carbon and other ecosystem services markets in the US is available at <http://www.fs.fed.us/ecosystemservices/carbon.shtml>

Major technical, economic and feedstock challenges exist regarding a substantial expansion of wood energy. The most energy-efficient use of wood remains direct combustion processes (Roberts and Nilsson 2008). Most forest products processing facilities already utilize wood residues for heat and power. There are also other industrial uses for mill residues (i.e., OSB production). Wood is a low density energy product that has relatively high harvest and transportation costs. Therefore, very little additional material is leaving the woods for the purpose of energy production. As fossil fuel costs increase, so does the cost of wood gathering and transport. Expanding the use of biomass for energy could tighten the supply for all users of woody biomass, causing prices of raw material to rise (Bratkovich *et al.* 2009).

There is substantial interest in cellulosic ethanol, which is more energy efficient and has lower environmental impacts compared to maize ethanol, which currently dominates the ethanol fuelmarket in the United States (Hill *et al.* 2006). Cellulosic ethanol faces a variety of economic and technical issues (Hill *et al.* 2006). Even if these can be overcome, it is likely that cellulosic ethanol will draw primarily from agricultural and municipal waste feedstocks. Of the six cellulosic ethanol prototype plants funded by the U.S. Department of Energy, only one will be based on forest biomass (Spelter and Zerbe 2008).

A variety of subsidies is in place or proposed for encouraging more use of biofuels. Such subsidies could act to spur technological innovations and could increase the amount of wood being harvested for energy. They could also have negative consequences. For example, if biobased fuels are given preferential treatment through public subsidies or mandates, that could very well act to displace higher value uses of wood, such as paper or panel products.⁴⁵

The Energy Independence and Security Act of 2007 contains a definition for renewable fuels eligible for federal subsidies. However, wood from public lands and non-plantation private forests does not meet the definition. Currently, Congress is debating a national cap-and-trade bill that may include a renewable energy standard governing electrical utilities. The definition of 'renewable energy' under the bill could substantially affect how much woody biomass is used to produce electrical energy in the near future.

A number of projections indicate that public policy-driven demand for bioenergy could transform the American forest products industry. The 2009 Annual Energy Outlook Report prepared by the Energy Information Administration⁴⁶ makes predictions out to 2030 based on the laws in place as of November 2008. This report predicts biomass energy generation increasing from 39 billion kilowatt-hours in 2007 to 231 billion kilowatt-hours in 2030 (Energy Information Administration 2009a). The Energy Information Administration (EIA) also analysed future biomass energy generation if a 25 percent federal renewable electricity standard is enacted. Depending on the scenario, the EIA predicts increases in biomass generation in 2030 from between 438 billion kilowatt-hours and 577 billion kilowatt-hours (EIA 2009b). Resources for the Future, a Washington, DC-based natural resource think tank, projected that federal mandates and subsidies for wood-based biofuels and bioenergy could increase national wood consumption by 60 percent by the 2020s, increasing wood prices by 20 percent or more (Sedjo and Sohngen 2009). It should be noted that such projections are based on federal subsidies and mandates both in existing laws and pending legislation which could be modified and likely will be.

⁴⁵ Information on wood-based bioenergy can be viewed at <http://www.pinchot.org/>

⁴⁶ The Energy Information Administration is an independent agency within the U.S. Department of Energy, which collects and analyses data on energy generation across all sectors and publishes analytical reports.

Wood as an energy-efficient building material

Buildings in the United States are responsible for 40 percent of total carbon emissions (U.S. Green Building Council 2007). As interest in 'green' building materials and practices grows, wood may be increasingly used in the green market place. Wood-based building materials typically can be produced with a much lower environmental footprint than alternative materials (Malmshheimer 2007; Bowyer 2005a; Lippke *et al.* 2004).

Leading green building rating and certification programmes are only now beginning to incorporate rating elements based on the environmental footprints associated with the manufacturing, transportation, use and disposal of major building materials (Bowyer 2006). As a matter of public policy the environmental footprint of building materials should be a key rating factor in green building programmes. Some progress has been made in this regard, but much more is needed (Bowyer and Lindburg 2008).

Environmental life cycle assessment (LCA) can provide an effective mechanism for evaluating the energy and other environmental impacts associated with raw material and building product choices and postconstruction maintenance and end-of-product-life strategies. Over the last few years, LCA has become an ever more sophisticated and powerful tool that has also become easier to use. One example is the Athena Eco-Calculator, which can be used to inform architectural design and building material selection.⁴⁷ Today, LCA data for a vast array of building products and assemblies are easy to access and use, with user-friendly, free or low-cost online and other software tools readily available to architects, civil engineers and others.

The use of wood products should benefit from expanded use of LCA tools and the associated LCA-related credits available through various green building programmes. A key challenge is to develop acceptable standards and protocols for life cycle analysis that are both technically sound and also accepted by advocates of building materials, which often fiercely compete in the marketplace (Bowyer 2005b).

Expansion in the use of conservation easements to protect forest land

Over the past few decades, public and private entities have shown a willingness to purchase conservation easements, which has been a positive factor in maintaining a private forest land base (Fernholtz 2006). Conservation easements are legally binding instruments under which a landowner relinquishes the right to develop a parcel of land for commercial or residential or other use specified in the agreement.

Conservation easements have become increasingly popular in the United States and Canada where local zoning ordinances limiting uses of land tend to be less restrictive than in European countries. A conservation easement typically allows the land to be managed for its current use.⁴⁸ An easement may be purchased by a government entity or conservation NGO. Landowners generally receive tax benefits if they donate an easement.

⁴⁷ <http://www.athenasmi.org/tools/ecoCalculator/>

⁴⁸ For an overview on conservation easements, see <http://attra.ncat.org/attra-pub/PDF/coneasements.pdf> and <http://www.dovetailinc.org/reportView.php?action=displayReport&reportID=48>

Between 1992 and 2009, the U.S. Forest Service, under its Legacy Program, has provided individual states a total of US\$392 million for public acquisition of land for conservation purposes. About 75 percent of this was used for purchase of conservation easements. States combined these funds with US\$517 million of funds from other sources to acquire land and easements amounting to 727 000 hectares (1.8 million acres).⁴⁹

Information on the total area covered by conservation easements and their locations is elusive. The National Land Trust Alliance estimates that conservation easements on 2.5 million hectares (6.2 million acres) of land have been acquired by conservation groups and land trusts.⁵⁰

There are a variety of public and private actors involved in the acquisition of conservation easements. The long-term effectiveness of these efforts would be enhanced by better coordination and development of strategic approaches for the acquisition of easements and land for conservation purposes.

Public policy recommendations to improve private sector investment in the forest sector

Reform tax policy

Because the United States relies so heavily on privately-owned forests for timber and a wide variety of environmental services, there is a public value and interest in seeking to keep private forests as working forests. The tax code is a key element in achieving this goal. Both the federal government and many states have created tax provisions that encourage forest ownership (Ellefson *et al.* 2005). Nevertheless, the existing federal and state tax codes are extremely complex and, for many forest landowners, often difficult to comprehend and apply.⁵¹

Current federal tax policy strongly discriminates against integrated forest product companies which own forest land. These tax law changes lead to the creation of a new class of forest owners interested primarily in return on investment, whether it comes from harvesting trees or subdividing land for commercial or residential use. Even if the land stays under forest use, this class of investors tends to periodically sell their land in units smaller than were purchased, which will lead over time to a decline in the economic attractiveness of managing the land for the production of forest products (Binkley 2007). Another result of this ownership shift has been a substantial reduction in research and development designed to maintain a globally competitive forest products industry. Should this situation persist, long-term negative effects on the forest sector are inevitable.

The change in the industry from one type of company (integrated) to another type of company (TIMOs, REITs) was an unintended effect, driven mostly by changes in federal tax policy. The consequences have been profound and are now essentially irreversible. The take home message is that tax policy changes can have profound and often unintended effects on

⁴⁹ <http://www.fs.fed.us/spf/coop/programs/loa/flp.shtml>

⁵⁰ <http://www.landtrustalliance.org/about-us>

⁵¹ Various efforts have been made to provide usable information to private non-corporate landowners to increase awareness of the tax implications of forest management (see the National Timber Tax Web site at <http://www.timbertax.org>).

investment and the very structure of an industry. Such changes should be thoroughly examined before their adoption.

There is no single public or private institution in the United States which has a charge of systematically evaluating federal and state tax laws, or proposed changes to them, as to their implications to sustainable forest management or the global competitiveness of the United States forest sector. If such an institution were to exist, Ellefson *et al.* (2005) suggest it should seek to address the following questions:

1. How do tax policies affect investments in long-term forest productivity?
2. How do they affect the propensity of private forest land owners to apply ecologically sound forest management practices?
3. How do they encourage retention or expansion of the forest land base?
4. How do they protect and increase the production of wildlife habitat and other important non-timber benefits?

The current tax code for the forest sector, which is so important to sustainable forest management, as well as to maintaining global competitiveness, has not been periodically or systematically evaluated yet as to how it addresses the four questions listed above; this suggests a substantial institutional void.

Recommendation: Consideration should be given to establishing new institutional arrangements (for example, a public/private entity) whose mission is to comprehensively evaluate federal, state and local tax codes, assess their effects on the United States forest sector and propose principles and appropriate modifications to enhance the sustainable management of forests and the global competitiveness of the forest sector.

Evaluate programmes and research and development priorities to enhance the global competitiveness of the forest sector

The U.S. Forest Service is by far the largest manager of funds for forest and rangeland research in the world, utilizing US\$286.9 million of enacted funding in 2008 (US\$225.6 million for forest and rangeland research plus US\$60.4 million for forest inventory and analysis) (USDA/Forest Service 2008c). However, despite this large research programme (and also other forestry programmes that focus on state and private forestry matters), the Forest Service does not promote sustaining the global competitiveness of the forest sector as one of its mission areas.

This stance is quite unlike that of other USDA agencies, such as the USDA Agricultural Research Service and USDA Economic Research Service, which both identify sustaining a competitive agricultural economy or the goal of a competitive agricultural system among top agency research priorities.⁵² This stance is also different from that of Canada and many European countries which have maintaining the competitiveness of the forest sector as a mission goal.

⁵² <http://www.ars.usda.gov/aboutus/docs.htm?docid=2> ; and <http://www.ers.usda.gov/Emphases/>

Although the Forest Service has a large and broad research programme, the agency has no permanent staff dedicated to focusing research, development or forestry programmes on sustaining global competitiveness or investment in the forest sector. Most state forestry agencies also lack sufficient staffing in economics to focus their programmes on global competitiveness issues. With few exceptions, no other federal agencies (including the Commerce Department) have any staff permanently dedicated to analysing or resolving forest sector competitiveness issues, apart from staff who are occasionally assigned to handle tariff or trade disputes. The USDA Foreign Agricultural Service (FAS) is engaged in promoting the use of American wood products in other countries that, in many cases, impose barriers to entry for American wood products.

There have been some industry, professional and non-governmental efforts to identify research priorities. Agenda 2020 focuses on research in energy and biofuels.⁵³ The Society of Wood Science and Technology is working on a strategic plan for wood product research.⁵⁴ But it is an open question whether these ad hoc efforts can realistically sustain the research capacity needed to maintain a globally competitive forest sector without active government involvement and commitment.

Recommendation: Assess the potential benefits of a collaborative public and private forest research structure designed to foster the global competitiveness of the United States forest sector.

Recommendation: In order to support the long-term sustainability of forests, both public and private, for a wide variety of values and ecosystem services, the federal government should assess the potential benefits of adopting as a public policy objective the goal of fostering the global competitiveness of the forest sector.

Expand use of conservation easements and improve coordination

Conservation easements are a very popular tool to maintain land under forest uses. Corporate and other financially driven landowners, such as TIMOs, tend to be receptive to selling easements as a way to boost returns on the land. Conservation easements can be a cost-effective policy tool to maintain the production of environmental services and retain land in forests. The most cost-effective time to acquire an easement is before development is imminent. There is a need, however, for better information on the area and location of land that has easements. There is also a need for better coordination among conservation NGOs and public agencies so that acquisition of easements can be strategic and minimize acquisition costs.

Recommendation: Initiate a public/private cooperative effort to address the following:

- 1. Assess the current extent and effectiveness of conservation easements.**
- 2. Evaluate the full range of associated public costs and benefits.**
- 3. Develop strategic approaches to maximize the effective use of easements.**

⁵³ <http://www.agenda2020.org/default.htm>

⁵⁴ <http://www.swst.org/meetings/NRNA08/NRNA.html>

Develop and promote effective approaches for life cycle analysis of building materials

Green certification programmes for building construction that recognize the lower life cycle impacts for wood products versus alternate materials could strengthen markets for structural wood products (Bowyer 2006).

The quality and ease of use of life cycle assessment has improved dramatically in recent years.⁵⁵ Improving existing tools for life cycle analysis and promoting their use by green building programmes should improve the position of wood compared to other building materials.

Life cycle analysis must be a key element in evaluating the carbon and environmental footprints associated with alternative building materials (Bowyer 2005a; Bowyer 2005b). Material selection is presently largely based on intuition and immediate cost, rather than science and total costs, leading to environmentally poor choices in many cases (Bowyer and Lindburg 2008).

Recommendation: A major effort should be made to work with appropriate standard-setting bodies and technical experts to refine approaches and appropriate protocols for assessing the life cycle environmental footprint of building materials. These studies then should be incorporated into the rating systems for green building standards. Continue and expand efforts to promote the use of life cycle assessment and improve its ease of use, sophistication and utility for builders.

Improve the reliability of federal forest product offerings

Since 1985, there has been a dramatic shift in the mission focus of federal lands, which is now largely on restoring and maintaining healthy ecological conditions and meeting the recreational and amenity preferences of local and national stakeholders. Thinning and controlled burning are critical management tools needed to restore and improve the ecological resiliency of many forests on federal lands. Yet the decline in the forest industry adjacent to many federal lands has substantially diminished the capacity to treat these lands.

Re-investment in efficient processing facilities adjacent to federal lands is hampered by the fact that: 1) many of these areas are quite distant from established markets, 2) the material now being harvested from these lands is largely small diameter, low value material from thinnings; and 3) the flow of this material tends to be both at low levels and inconsistent and unreliable over time.

In recent years, efforts have been made to provide information on the nature and timing of material being offered from federal and state lands in logical supply areas. This project, called Coordinated Resource Offering Protocol (CROP), has several objectives: 1) to facilitate coordination of biomass removal between public agencies; 2) facilitate the use of long-term multi-agency stewardship contracts to achieve biomass removal; 3) increase the certainty of 'levelized' biomass supply offerings from public agencies; 4) invite investment back into a

⁵⁵ One example is the Athena Eco-Calculator, which can be used to inform architectural design and building material selection (<http://www.athenasmi.org/tools/ecoCalculator/>)

sustainable forest management landscape; and 5) heighten public trust and support for biomass removal from public lands operating within a transparent process (Mater 2007).⁵⁶

Recommendation: The CROP programme should be evaluated for effectiveness and, if appropriate, expanded. In addition, other barriers to attracting appropriate investments in processing capacity adjacent to public lands should be systematically assessed and addressed.

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⁵⁶ http://www.forestsandrangelands.gov/Woody_Biomass/supply/CROP/index.shtml

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Useful Internet sources

- Forest inventory data for the United States: <http://www.fia.fs.fed.us/>
- Forest Service research publications: <http://www.fs.fed.us/links/pubs.shtml>
- RPA Assessment documents: <http://www.fs.fed.us/research/rpa/assessment-pub.shtml>
- Information on United States income and property taxes on private forests: <http://www.timbertax.org/>
- For the EPA site with forest water quality and state best management practices (BMPs) rules: <http://www.epa.gov/owow/nps/forestry.html>

Appendix 1. Brief summary of the 1970 environmental laws that had the most significant effect on the US forest sector⁵⁷

Clean Water and Clean Air Acts

Under both the Clean Water Act and Clean Air Acts, the Environmental Protection Agency (EPA) establishes overall standards for protection of air and water quality. States are responsible for implementing these standards and receive some federal funding to do so. All states have passed laws and issued implementing regulations to govern compliance with the federal regulations under the Clean Air and Clean Water Acts. The focus in the 1970s of both of these federal environmental laws was to address the substantial pollution levels that were coming from industrial and manufacturing facilities and municipal sewage sources.

Although the states have the primary responsibility to implement these acts, the federal government retains the authority to step in directly to require compliance of industrial and municipal sources of pollution if the state regulatory performance is inadequate. This federal intervention has occurred on a number of occasions.

Under the Clean Water Act, forestry and farming operations are considered ‘non-point’ sources of pollution. Prevention of soil erosion from forest lands is done indirectly through the use of best management practices (BMPs) that guide forestry operations, including road building, to reduce soil movement to streams. States are responsible for developing and implementing BMPs for logging operations.⁵⁸

Under Section 404 of the Clean Water Act, landowners wishing to drain or fill all or a portion of a wetland must obtain a federal permit from the U.S. Army Corps of Engineers (COE). Notice is issued on permit applications and the public may provide comments. In issuing the permit, the COE must consider any comments received, the importance of the wetland values involved and options to minimize the environmental impacts of the proposed action. The permit applicant may be required to mitigate the effects of the proposed action by restoring or creating wetlands elsewhere. General permits are issued to cover certain categories of relatively routine activities, such as minor road crossings. The EPA can override a COE decision to grant a dredge or fill permit.⁵⁹

Under the Clean Air Act, forestry and farming operations are considered ‘area’ sources of pollution. Many states have excluded agriculture from regulation. In many states, the use of prescribed burning from forestry operations must be coordinated through responsible state air quality agencies and/or the state forestry agency to minimize smoke emissions through the timing of burning operations and other techniques. Smoke management requirements are generally tailored to the existing ambient air quality. If air quality from other sources is poor, smoke management requirements on forestry operations can be significant.⁶⁰

⁵⁷ Additional summary information on some of the 1970s environmental laws: <http://ceprofs.tamu.edu/rhann/links/law.asp>

⁵⁸ Information on state level BMPs for protecting water quality: <http://www.epa.gov/owow/nps/forestry.html>

⁵⁹ Information on Section 404 requirements can be obtained from: <http://www.epa.gov/owow/wetlands/facts/fact10.html>

⁶⁰ Information on smoke management requirements can be obtained from: <http://www.epa.gov/agriculture/tburn.html>

Endangered Species Act

The Endangered Species Act of 1973 (ESA) is one of the most far reaching of United States environmental laws. Section 7 of the ESA prohibits federal agencies from carrying out actions that might jeopardize the continued existence of any species listed as threatened or endangered by the U.S. Fish and Wildlife Service (F&WS) or National Marine Fisheries Service (NMFS). Under the law, this obligation of federal agencies to protect listed species is absolute and cannot be mitigated or reduced by considerations of the adverse social or economic impacts of doing so.⁶¹ In 2002, 517 species of animals and 745 species of plants were listed as threatened or endangered in the United States.

The ESA requires federal agencies to be proactive in conserving threatened and endangered species and the ecosystems upon which they depend. Also, the F&WS and NMFS, through the 'consultation' process required by the act, must review projects and activities proposed by federal agencies that would affect listed species or their habitat and concur with or issue a biological opinion on such projects.

The ESA has had less effect on private landowners than it has had on federal land-managing agencies. Nevertheless, under the ESA it is a federal offence for private parties to 'take' listed animal species. Over the years, some courts have interpreted this to encompass not only direct purposeful actions that harm listed species, but indirect actions by private landowners resulting in modification of habitat to the detriment of a listed species. The F&WS directly enforces the ESA on private lands, rather than working through the states, as is the case for most other federal environmental laws.

The ESA has been viewed as sometimes having a perverse effect on private landowner behaviour, in that it is generally accepted that some landowners, in order to avoid federal regulation, harvest their trees before the stands reach a condition that they could become attractive to a listed species, such as the red-cockaded woodpecker (Zhang 2000). In response, under Section 10(a)(2) of the ESA, the F&WS has sought to allay landowners' fears by entering into agreements, called Habitat Conservation Plans, that reduce landowner financial and regulatory risk if private forests are managed in part as habitat for endangered or threatened species.⁶²

NEPA

Along with the ESA, the National Environmental Policy Act (NEPA) was another significant piece of 1970s era environmental legislation that has substantially affected federal agencies. NEPA established the Council on Environmental Quality, a White House agency, to give executive advice and coordination on environmental matters.

⁶¹ The only provision in ESA for considering the economic and social trade-offs involved in a proposed federal action that would jeopardize a listed species requires convening a cabinet-level committee. This has seldom been done.

⁶² Information on HCPs can be found at: <http://endangered.fws.gov/hcp/>

NEPA also required federal agencies proposing actions that would have a significant effect on the environment to examine and disclose in an Environmental Impact Statement (EIS) the anticipated environmental effects of the proposed action and of a reasonable range of alternatives to it. Although a procedural requirement, over the years (and shaped by myriad court decisions interpreting what federal agencies must do) the requirement to prepare EISs, and seek public input on them, has evolved into a significant obligation of federal land-managing agencies.⁶³ Many states have adopted NEPA-like obligations on state-level agencies, as well.

⁶³ For additional information on NEPA and its implementation, go to: <http://ceq.eh.doe.gov/nepa/nepanet.htm>

Private sector financing for forestry in Viet Nam

Pham Quang Ha¹ and Le Trong Hung²

Introduction

Viet Nam's forestry sector is undergoing many important changes as the country becomes increasingly integrated into the global economy. These changes are reflected in the new Vietnam Forestry Development Strategy, 2006-2020 (MARD 2007a). This strategy sketches out medium-term strategic directions for the overall sector aimed at ensuring wider participation from various economic sectors and social organizations to make more meaningful contributions to national socio-economic development, poverty reduction and improvement of rural livelihoods and environmental protection. Achieving these objectives will require the active engagement of all relevant stakeholders as well as the mobilization of other resources and investment financing, especially from the private sector – both domestic and foreign.

In the last few years, the forestry sector in Viet Nam has achieved significant results. Forest area increased from 9.3 million hectares in 1995 to 12.73 million hectares in 2007 (on average by around 0.3 million hectares/year) (MARD 2007a). The forest plantation area reached 2 551 400 hectares by 2007. Yield from plantation forests is now around 2 million m³/year and can partially supply material to the paper and mining industries, wood chips for export and fuel wood, thus reducing pressure on natural forests (MARD 2008).

The timber-processing industry and export of forest products have been vigorously developed in recent years (export of wood products increased from US\$61 million in 1996 to US\$1 570 million in 2005 and an estimated US\$2 700 million in 2008) (MARD 2008), which has significantly contributed to the export turnover of the entire country and created opportunities for the development of forest plantations supplying raw materials to industry.

Forestry production activities have shifted from state-owned enterprises (that followed central planning mechanisms) towards multisector-based socialized forestry, which favours commodity production.

However, the forestry sector still faces many challenges, such as:

- The productivity and quality of plantations and natural forest is still low.
- Although there has been an increase in forest area, the quality and biodiversity of natural forest in many locations has steadily declined.
- The growth of the forestry sector is limited and unsustainable.
- In addition to low levels of competitiveness there is a failure to properly and effectively use forest resources, including non-wood forest products (NWFPs) and environmental services. As a result the forestry sector has not yet met the demands for socio-economic development, especially for processing industries and export.

¹ Institute for Agricultural Environment (Hanoi, Viet Nam).

² Ministry of Education and Training (Viet Nam).

- The forest product processing industry has developed unsustainably due to a lack of long-term planning and strategies for growth. This has been exacerbated by low competitiveness as well as inadequate investment funds for technology development and modernization. Furthermore, raw material sources are unstable and dependency on imports remains.

Demand for forest products

Demand for forest products in Viet Nam is increasing. Key factors that put this into perspective are: the population is expected to expand by 20 million to 100 million in 2020; GDP growth at 7-8 percent *per annum*, trebling real GDP per capita by 2020; growing international demand and improved market access will stimulate export demand; economic development and urbanization will increase demand for environmental services.

Significant growth is expected in demand for industrial forest products. An increase in demand for environmental services such as outdoor recreational activities is also expected (MARD 2005). Demand for forest products is expected to increase by around 7-9 percent *per annum* over coming years.

International demand trends

According to Katila (2007), international demand is growing, but less so in North America and Western Europe compared to Asia, especially the People's Republic of China, where demand is growing rapidly. The increase in demand in the Asian region is also driving international demand. The characteristics of wood product demand from an international perspective are primarily:

- Demand for wooden furniture, secondary processed wood products and panels will increase.
- Demand prospects for paper and paperboard are highest in Asia, especially in the People's Republic of China and India.
- Demand for paper-making fibre is expected to increase by 126 million tonnes by 2020.
- Japan will remain a major importer of wood chips in the foreseeable future.
- Most of the new fibre in Asia will be supplied by fast-growing plantations (e.g., *Acacia*, *Eucalyptus* spp.).
- Increasing demand for certified wood products and demonstration of legal origin (e.g., Forest Law Enforcement Governance and Trade [FLEGT]).

Overview of the forestry and wood-processing sectors

Current status of forestry and forest land in Viet Nam

Forest land occupies about 38 percent of the total land area of Viet Nam. It is concentrated mainly among state-owned forest companies (19 percent), households, individuals (22 percent), protection forest management boards (17 percent) and commune committees (20 percent). Thus, the development of production forestry depends mainly on state-owned forest

companies, households and individuals. The area under joint-venture production between households and organizations occupies only 1 percent of the total current forest area (Table 1). The main thrusts for enhancing forest production efficiency focus on three forest management targets: state-owned forest companies; households; and joint-venture units. It is widely acknowledged that private investment in forestry will play an important role in the future (Dawson 2007).

Table 1. Forestry structure under management groups

| Forest owner | Area (ha) | % |
|--------------------------------------|-------------------|------------|
| State-owned forestry companies | 2 505 000 | 19 |
| Protection forest management boards | 2 156 000 | 17 |
| Special-use forest management boards | 1 743 000 | 13 |
| Households, individuals | 2 866 000 | 22 |
| Communities | 592 000 | 5 |
| Military units | 361 000 | 3 |
| Joint-venture units | 98 000 | 1 |
| Commune committees | 2 553 000 | 20 |
| Total | 12 874 000 | 100 |

Source: MARD (2007a).

Wood processing

There are about 2 500 wood-processing plants in Viet Nam. They comprise:

- 26 wood-chipping plants (with production capacity of 25 000 to 180 000 tonnes dried chips per year) and small chip plants with total production capacity of about 2 million tonnes dried chips per year, equivalent to about 4 million m³ of logs from plantation forest.
- 11 particle board-processing facilities and small-scale production plants (in 2006, particle board production in Dong Nai Province was about 20 000 m³). Their total production capacity is about 55 000 m³ per year.
- Five medium density fibreboard plants with total production capacity of about 140 000 m³ per year.
- About 20 laminated timber plants with total production capacity of about 180 000 m³ per year.
- About 15 plywood plants with total production capacity of about 34 000 m³ per year.

Industrial production capacity is estimated to be above 7 million m³ of logs. Currently, Viet Nam has to import 70-80 percent of its wood raw material; therefore, there is no professional sawing industry.

There are about 300 Foreign Direct Investment (FDI) enterprises that conduct large-scale production; they account for 50 percent of the total export value of wood products for Viet Nam. The remainder is small and medium domestic enterprises.

There are 108 state-owned enterprises, 401 limited companies, 189 joint stock companies, 418 private companies and 300 FDI enterprises; the figure for joint-venture enterprises is unknown. There are 687 other businesses.

The paper and pulp mills are mainly located in northern and southern Viet Nam. Large-scale wood-processing enterprises are mainly located in eastern South Vietnamese provinces such as Binh Duong (370 large-scale enterprises [in total 650 enterprises], of which more than 50 percent have FDI support), Ho Chi Minh City, Dong Nai (219 large-scale enterprises [in total 706 enterprises], of which about 50 enterprises have FDI support) and Binh Dinh.

Wood-chip plants are mainly located in northeastern, northern central and coastal areas of the southern central region, near deep-water ports and plantation forests or where there is good water transportation infrastructure.

The export market for wood products (2000-2007)

In recent years, the wood-processing industry and its export value have increased dramatically with export turnover reaching US\$2.5 billion in 2007, 3.4 times higher than in 2003 (US\$567 million) and more than ten times compared to 2000 (US\$219 million). Wood products are ranked 4 in the top ten main export products of Viet Nam and are now exported to more than 120 markets worldwide; the main markets are the United States, the European Union and Japan. Tables 2 and 3 show export turnover of wood products in recent years:

Table 2. Turnover of wood products, 1996-2007 (US\$ million)

| Year | 1996 | 1998 | 2000 | 2001 | 2002 | 2003 | 2004 | 2005 | 2006 | 2007 |
|----------|------|------|------|------|------|------|-------|-------|-------|-------|
| Turnover | 61 | 108 | 219 | 334 | 435 | 567 | 1 154 | 1 562 | 1 930 | 2 500 |

Source: Le Trong Hung (2006a).

Table 3. Turnover of wood products in main export markets, 2003-2007 (US\$ million)

| Market \ Year | 2003 | 2004 | 2005 | 2006 | 2007 |
|----------------|-------|-------|-------|-------|------|
| United States | 115.4 | 318. | 566.9 | 744.1 | 930 |
| European Union | 160.7 | 379.1 | 457.6 | 500.2 | |
| Japan | 137.9 | 180 | 240.8 | 286.8 | |

Source: Le Trong Hung (2006a).

Investment in the forestry sector from 2001-2005

From 2001 to 2005, investment in the forestry sector was used by different stakeholders for activities such as forest plantations, wood processing and infrastructure development. During this period, 88.4 percent of the capital used in the forestry sector came from investment sources and 11.5 percent from administrative expenditure (Le Trong Hung 2006b). Table 4 shows the total annual investment in the forestry sector from 2001 to 2005.

Table 4. Annual investment in the forest sector 2001-2005 (US\$ million)

| Item | 2001 | 2002 | 2003 | 2004 | 2005 | Total |
|---|--------------|--------------|--------------|--------------|--------------|--------------|
| Total investment | 165.3 | 179.1 | 206.3 | 208.0 | 214.0 | 972.7 |
| State budget for the 661 programme* | 20.7 | 21.7 | 24.5 | 31.3 | 40.6 | 138.8 |
| Infrastructure investment | 24.5 | 35.2 | 45.7 | 34.9 | 42.6 | 182.9 |
| Credit | 43.1 | 49.5 | 42.4 | 42.5 | 39.2 | 216.7 |
| Capital of enterprises and state forest enterprises | 0.7 | 1.0 | 4.4 | 4.3 | 4.4 | 14.8 |
| FDI | 7.1 | 18.1 | 35.1 | 40.0 | 40.3 | 140.6 |
| Household investments | 4.7 | 4.8 | 5.2 | 5.4 | 5.8 | 25.9 |
| ODA | 63.7 | 47.0 | 48.5 | 47.2 | 38.6 | 245.0 |
| Other | 0.8 | 1.8 | 0.5 | 2.4 | 2.5 | 8.0 |

*State-funded 5 million hectare reforestation programme.

Source: MARD (2007a).

Expected investment requirements for 2006-2020

Anticipated investment requirements for 2006 to 2010 and 2011 to 2020 are given in Table 5.

Table 5. Expected investment requirements for 2006-2020 in US\$ million

| Programmes | 2006-2010 | 2011-2020 | Total | % | Govn't budget (%) | From other sources (%) |
|---|----------------|----------------|----------------|-----|-------------------|------------------------|
| Total | 1 879.0 | 4 024.2 | 5 903.2 | | | |
| Sustainable forest management | 953.7 | 1 660.0 | 2 613.7 | 44 | 30 | 70 |
| Forest protection, biodiversity conservation and environmental services | 227.7 | 603.7 | 831.4 | 14 | 60 | 40 |
| Timber and forest product processing and trade | 613.4 | 1 568.4 | 2 181.8 | 37 | 5 | 95 |
| Research, education, training and extension | 32.1 | 49.9 | 82.0 | 1.4 | 80 | 20 |
| Renovation of institutions, policy, planning and monitoring | 52.1 | 142.2 | 194.4 | 3.3 | 100 | 0 |

Source: MARD (2007a).

Review of investment attractiveness

Key government policies to promote investment in the private sector for forestry development

The main components of the current state laws, policies and regulations on promoting the private sector to invest in the forestry sector are summarized as follows (Dinh Ngoc Minh 2007):

According to the 2005 Law on Enterprises:

- The state recognizes the long-term existence and development of all kinds of enterprises as regulated by the law; ensures equity among enterprises without any discrimination in terms of ownership and economic entity; and acknowledges the legal revenue generation of all business operations.
- The state admits and reserves rights on asset ownership, investment capital, income and other rights and legal interests of the enterprise and enterprise owner.
- Assets and legal capital invested by the enterprises shall not be nationalized and confiscated by administrative measures.

Decree No. 88/2006/ND-CP dated 29 August 2006 specifies the procedures and steps for enterprise registration and the licence shall be issued within ten days from the date of receipt of an eligible set of documents. Provisions on the eligibility of the dossier, procedures, principles, steps and maximum duration required for dealing with the registration and establishment of enterprises are specified clearly. Such provisions actively support enterprises, particularly small- and medium-sized enterprises, including private enterprises working in the forest sector, to reduce the duration and costs attached to these steps.

The Ministry of Planning and Investment, the Ministry of Finance and the Ministry of National Security jointly issued Circular No. 02/2006/TTLT-KHDT-TC-CA. This circular provides for a 'one-stop shop' mechanism applicable to procedures on registration of business operations, tax codes and official stamps. Thus, the investor spends less time on accomplishing these matters.

The spirit of the 2005 Law on Tendering also aims at securing equal competition among economic sectors in terms of utilizing state sources while creating favourable conditions for the private sector for development.

Policy on investment and investment support

Investment policy

The investment policy in general, and for the forest sector in particular, is specified in the Investment Law approved by the National Assembly on 29 November 2005 and effective from 1 July 2006. Details include:

- The investor is permitted to invest in fields that are allowable by state laws; to be self-controlled and to have the right to take the initiative in making decisions on investment in accordance with state laws.
- The state treats all investors from different economic sectors, both local and foreign investors, on an equal legal basis; it encourages and creates favourable conditions for investment operations.
- The state admits and reserves rights on asset ownership, investment capital, income and other legal rights and interests of the investor; it recognizes the existence and long-term development of the investments.
- The state is committed to the international investment conventions to which Viet Nam is a signatory (member).

The 2004 Forest Protection and Development Law also identifies investment policy in forestry. Some of the specific details are:

- The state issues investment policy on forest protection and development that is in line and consistent with other socio-economic policies with preference for investment in infrastructure, human resources, fixed settlement and cultivation, and stable and improved livelihoods of rural and mountain-dwelling people.
- The state invests in forest protection, development for special-use, protection and seedling forests; protects and develops rare, precious and endangered species; studies and adapts scientific and technological outputs and provides training for human resources on forest protection and development; develops advanced forest management systems, forest inventory and statistics compilation and monitors forest resource development; establishes specialized forces for forest fire prevention and fighting; and invests in facilities, techniques and other tools and equipment to support prevention and fighting of both forest fires and insect attacks.
- The state has policies for encouraging protection and enrichment of degraded natural forests, production forests providing large, rare wood and exotic species; supporting infrastructure construction in areas providing raw material supply; and promoting forestry extension and support for disadvantaged people to develop forests, production, processing and forest product utilization.
- The state encourages organizations, households and individuals to accept barren lands and denuded hills for forest development purposes; gives priority to plantation forests supplying materials to economic sectors; expands forest and land contract types for afforestation purposes; offers preferential tax and tax exemption for those working in forestry activities; and issues policies applicable to credit agencies that provide investment funds with preferential interest for afforestation purposes.
- The state has issued a policy on developing markets for forest products, encouraging organizations, households and individuals in all economic sectors to invest in processing industries and in trade villages engaged in processing forest products.
- The state encourages the provision of insurance for plantation forests and other production activities.

Investment support

In the context of support for technology transfer:

- The state creates favourable conditions and secures the rights and legal interests of parties involved in technology transfer, including contributing capital through technologies, in order to implement investment projects in Viet Nam under state laws on intellectual property and laws on technology transfer.
- The state encourages the transfer of advanced technologies and technologies to Viet Nam regarding manufacture of new products, improved production capacity, competitiveness, product quality, cost and energy effectiveness.

In the context of support for training:

- The state encourages the establishment of funds, with contributions from counterpart funds and donations from local and foreign organizations and individuals, for training human resources.
- Training costs paid from the enterprise's budget are eligible costs in calculating the taxable income of the enterprise.
- The state uses the state budget to upgrade enterprises' human resources through training programmes.

In the context of support and encouraging investment in service development: The state encourages and supports organizations and individuals to provide investment support services in the following cases:

- Investment and management consultation services.
- Consultation on intellectual property, technology transfer.
- Vocational, technical and management training.
- Providing information on market, scientific and technological information, and socio-economic information requested by investors.
- Marketing and trade promotion.
- Establishing and participating in civil society associations, socio-vocational organizations.
- Establishing centres for design and experimentation to support the development of small and medium enterprises.

In the context of investment in infrastructure for industrial zones, processing zones, high technology and economic zones:

- Support to invest in socio-technological infrastructure outside industrial, processing, high technology and economic zones.
- For localities facing difficult socio-economic conditions and those with particular disadvantages, the state partly provides capital for these localities, apart from the investor, for infrastructure development within the boundaries of the industrial and processing zones.
- The state spends investment funds from the state budget and offers preferential credit to invest in socio-technical infrastructure development within the boundaries of high technology and economic zones.

In the context of visa processing: Foreign investors, experts and skilled workers working regularly with investment projects and their family members are issued renewable visas according to their needs.

Preferential investment

Decree No. 108/2006/ND-CP, issued on 22 September 2006 specifies provisions and guidelines for enforcing Investment Law provisions. It specifies that investors operating investment projects, including expansion of existing projects, under the framework of preferential fields and localities, are offered:

- Preferential income tax rates, as specified by the state laws on enterprise income tax:
 - For respective fields and localities, investors may receive preferential income tax rates with three levels: 10, 15 or 20 percent applicable to periods, respectively, of 9, 12 or 15 years, or for the whole project duration. (The regular income tax rate applied to enterprises is 28 percent.)
- Tax exemption is applicable to enterprises for a maximum of four years, with the reduced rate of 50 percent for a maximum of the following nine years (applicable to projects under preferential treatment and those operating in high technology zones).
- Preferential import taxes are applicable to goods imported in accordance with the import-export laws. Import tax exemption is applicable to goods imported to establish fixed assets (machinery, specialized transportation facilities and materials that cannot be manufactured locally) and materials under specified circumstances.
- Tax exemption and reduction are applicable to land-use taxes, land-use costs, land rent and water surface taxes, in accordance with the state laws and regulations on land and taxation.

Investment procedures

Decree No. 108/2006/ND-CP specifies that the investment licence issuing authorities, the agencies receiving investment project dossiers and investment procedures are decentralized to the Provincial Peoples' Committees (PPCs) and management boards of industrial zones, processing zones, high technology and economic zones, in terms of review for issuance of investment licences for investors in general, and forestry investment projects in particular. Decree 108/2006/ND-CP specifies investment registration procedures applicable to projects valued under US\$17 647 000 and projects that are not listed under the conditional investment fields; procedures on verifying investment licence issuance applicable to projects valued at US\$17 647 000 and above; and projects listed under the conditional investment fields.

Land laws

Land policies are specified in the 2003 Land Law and other guiding documents, including: Decree No. 181/2004/ND-CP dated 29 October 2004 on the implementation of the Land Law; Decree No. 182/2004/ND-CP dated 29 October 2004 on dealing with land-related violations; Decree No. 198/2004/ND-CP dated 3 December 2004 on collecting land-use fees; Decree No. 197/2004/ND-CP dated 3 December 2004 on compensation and support for resettlement once lands are reclaimed by the state; Decree No. 17/2006/ND-CP dated 17 January 2006 on the

revision and supplement of some provisions of the decree guiding implementation of the Land Law; and Decree No. 187/2004/ND-CP on transforming from a state company into a joint stock company..

The procedures for land allocation, land lease and issuance of land-use certificates, including land for forestry development purposes, are specified in the 2003 Land Law and Decree No. 181/2004/ND-CP. The Investment Law also states that the investor has the right to be treated equally in terms of accessing and using credit, land and resources in accordance with state laws and regulations.

Policy on timber harvesting and forest product transportation

Decision No. 40/2005/QD-BNN dated 7 July 2005, issued by MARD, specifies the regulations on harvesting timber and other forest products. With respect to this decision, organizations, enterprises or individuals that have invested in plantation forests are free to decide upon the harvesting period and harvest volume, and harvested products may be freely transported. For cases in which the plantation forest was developed through investments financed by state loans or guaranteed by the state, and for natural forest, the harvesting must be licensed by the appropriate authority. The harvesting licence application process is complex and this contributes significantly to increasing the production costs of the sector.

Competitive advantages of the forestry industry vis-à-vis new markets

Investments in forestry and wood production in the future should focus on products that Viet Nam could produce with high competitive prices in new markets. Traditionally, free trade provided advantages to Viet Nam via market access within the Asia-Pacific Economic Cooperation (APEC) framework and agreements for most favoured nation status within the framework of the European Union. Free trade in the future will facilitate greater market access for Viet Nam, providing new opportunities for forest products. On the other hand, free trade will also create stronger competition for the forest industry of Viet Nam, particularly wood-based panel and paper products. The production cost per unit must be reduced to 30 percent in the biggest paper factory (Bai Bang) and more than 30 percent in smaller factories to compensate for the reduction in import tariffs that until recently have protected the paper industry. This is a major challenge that inefficient factories are facing as import tariffs are to be reduced on all products across the forestry sector.

The main obstacle to the expansion of wood products and other refined forest product exports is the shortage of raw materials. The increased price of imported wood and higher salaries may affect the current competitiveness of the Vietnamese wood product industry that offers:

- A low industrial wage structure and a diligent workforce.
- Competitive production costs: the wood-processing sector is labour-intensive, so production costs are highly competitive.
- Good value: service, product quality and competitive prices compared to equivalent products from other Asian countries.
- Expanding and diverse markets: accession to the World Trade Organization (WTO) and free-trade agreements that extend export markets; economic growth fuelling domestic demand.

- Access and infrastructure: nine sea ports provide access to international shipping lines and facilitate export of wood products and import of raw materials and equipment.

Land availability

The forest land structure has changed in accordance with the National Forestry Development Strategy (2006-2020) (Table 6). The area of production forest has increased from 5.43 million hectares in 2005 to 8.4 million hectares in 2010. The objectives of the forestry sector are:

- To stabilize the area of protection and special-use forest areas and to promote production forest to address the basic issues in the sector such as job creation and income generation, development of forest based on intensive cultivation and agroforestry techniques and promotion of ecotourism and other environmental services.
- To establish a stable 6.58 million hectares of production forest focusing on a concentrated regional supply of materials and sustainable forest-use management with multiple objectives. The remaining 1.82 million hectares are to be used for forest rehabilitation and agroforestry.
- To promote afforestation via intensive cultivation techniques to meet the needs of the wood-processing and furniture industry, generate multipurpose and non-timber species plantations and supply high quality seed stock to increase forest plantation productivity.

Table 6. Structure of forest and forestry land up to 2020 (million hectares)

| Status in 2005 | | Planned orientations | | |
|-------------------------------|--------------|--|--------------|--------------|
| Categories | 2005 | Categories | 2010 | 2020 |
| Total forest land area | 14.67 | Total forest land area planned for forestry development of Viet Nam | 16.24 | 16.24 |
| Forested land | 12.28 | Forested land | 14.12 | 14.42 |
| Unforested land | 2.39 | Plantations | 0.30 | 0 |
| | | Land for forest rehabilitation and agroforestry | 1.82 | 1.82 |
| a. Protection forest | 7.17 | a. Protection forest | 5.68 | 5.68 |
| Forested land | 5.86 | Forested land | 5.68 | 5.68 |
| Unforested land | 1.31 | Unforested land | 0 | 0 |
| b. Special-use forest | 2.07 | b. Special-use forest | 2.16 | 2.16 |
| Forested land | 1.92 | Forested land | 2.16 | 2.16 |
| | | Bare land for afforestation | 0 | 0 |
| Unforested land | 0.15 | Unforested land | 0 | 0 |
| c. Production forest | 5.43 | c. Production forest | 8.40 | 8.40 |
| Forested land | 4.50 | Forested land | 6.28 | 6.58 |
| Natural forest | 3.26 | Natural forest | 3.63 | 3.63 |
| Plantation forest | 1.24 | Plantation forest | 2.65 | 2.95 |
| Unforested land | 0.93 | Land for plantation | 0.30 | 0 |
| | | Land for forest rehabilitation and agroforestry | 1.82 | 1.82 |
| % of forested land | 37.4 | | 42.6% | 43.5% |
| % of forest coverage | 36.7 | | 40.8% | 43.5% |

Source: MARD (2007a).

Forest land area structure

The current production forest area under various management groups is shown in Table 7. As the majority of production forest is managed by households/individuals and economic organizations, it is clear that increasing the effectiveness of forest management and use by these groups is critical to the forestry sector. Policy and investment incentives for these stakeholders are priorities in the forestry sector. These stakeholders have crucial roles in forestry production.

Table 7. Production forest area and other uses

| Managers | Total production (ha) | Unforested land area | Land area forest regeneration | Forest land | | |
|-----------------------------|-----------------------|----------------------|-------------------------------|-------------|----------------|-------------------|
| | | | | Total | Natural forest | Plantation forest |
| Total forest area (ha) | 4 567 216 | 528 443 | 260 258 | 3 778 515 | 2 591 784 | 1 186 731 |
| Households, individuals | 1 808 005 | 309 186 | 172 058 | 1 326 761 | 641 507 | 685 254 |
| Economic organizations | 2 050 167 | 155 171 | 51 846 | 1 843 150 | 1 447 754 | 395 396 |
| Joint-venture organizations | 475 | | 310 | 165 | | 165 |
| Communities | 9 834 | 833 | 2 963 | 6 038 | 5 504 | 534 |
| PPCs | 173 734 | 8 918 | 11 035 | 153 781 | 135 682 | 18 099 |
| Other organizations | 515 013 | 53 211 | 22 044 | 439 758 | 361 272 | 78 486 |

Investment in the forestry sector due to land availability is considered to be an attractive proposition, especially with regard to the launching of land and forest allocation programmes by the government since 1994. These programmes allocate forest and forest land to households for long-term periods with perks such as mortgage assistance, transfer and inheritance rights, making almost all households with allocated land and forest the rightful owners of their property.

Allocation of forest and forest land to organizations, households and individuals is determined in the Land Law, 2003 and Forest Protection and Development Law, 2004; it is clearly explained in Decree No. 02/CP issued in 1994. Since 1994, forest land has been allocated over a wide area in accordance with the aforesaid decree and Decree No. 163/1999/ND-CP and Decree No. 181/2003/ND-CP on enforcement of the Land Law, 2003. According to these statutes, households and individuals are allocated forest land with a maximum area of 30 hectares for 50 years. If more than 30 hectares is needed, households and individuals can lease at the rate of 0.5 percent of the land-use rights price from PPCs following Decree No. 188/2004/ND-CP. The duration may be extended if households are in need of more land.

The Forest Protection and Development Law, 2004 addresses adjustments of relationships to forests as assets on land. The government allocates production forests as natural forests and plantations to households and does not collect forest-use fees.

According to report No. 93/BC-CP issued by the government on 19 October 2007, by 30 September 2007, the allocated forest land area was 13 075 604 hectares. The area with land-use rights issued to households, individuals and organizations was 8 116 154 hectares, of which 3 169 084 hectares belonged to households and individuals (Table 8).

Table 8. Land-use rights issued up to 30 September 2007

| Regions | Total area in need of certificate issuance | Use rights issued No. of certificates | Area | | Organizations* | | To | |
|------------------|---|--|-----------|------|---------------------|------------|----------------------------|------------|
| | | | Ha | % | No. certificates | Area ha | Households, individuals | |
| | | | | | | | No. certificates | Area ha |
| Whole country | 13 075 604 | 1 111 302 | 8 116 154 | 62.1 | 5 518 | 4 947 070 | 1 104 109 | 3 169 084 |
| North | 4 600 310 | 590 768 | 3 349 743 | 72.8 | 3 201 | 1 215 751 | 587 567 | 2 133 992 |
| mountainous | | | | | | | | |
| Northeast | 115 973 | 8 502 | 17 741 | 15.3 | 53 | 4 016 | 8 449 | 13 725 |
| Northern central | 2 222 539 | 223 499 | 1 541 648 | 69.4 | 585 | 890 512 | 222 914 | 651 136 |
| Southern central | 1 838 158 | 191 272 | 1 085 887 | 59.1 | 564 | 862 821 | 190 708 | 223 066 |
| Highlands | 3 319 823 | 61 722 | 1 550 138 | 46.7 | 922 | 1 496 723 | 60 800 | 53 415 |
| Southeast | 613 142 | 2 862 | 313 700 | 51.2 | 63 | 307 425 | 1 124 | 6 275 |
| Southwest | 365 659 | 30 826 | 253 034 | 69.2 | 130 | 169 822 | 30 696 | 83 212 |

*Organizations: forestry companies, state-run forestry enterprises, schools, the military.

Land-use rights certificates are very important for households and landowners. With them, landowners can acquire mortgages or use them as collateral for borrowing money from banks to invest in forest production. Table 8 shows that the northern mountainous provinces, the northern central region and the south central region have higher percentages of allocated forest land areas, but the percentage for highland areas is lower due largely to slow implementation of certificate issue by local authorities.

According to data from the Department of Forestry, by 31 December 2007, 10 006 village communities (mainly belonging to ethnic minorities) were managing and using 2 792 946.3 hectares of forest and barren land for developing forest. Of this area, about 1 916 169.2 hectares were forest land and 876 771 hectares were barren land or denuded hills occupying about 17.2 percent of the planned national forestry area (16.24 million hectares) or 15 percent of Viet Nam's total forest area. Community use and management was disaggregated into:

- Areas allocated to communities by legal government authorities (with land-use rights certificates): 1 643 251 hectares.
- Areas under traditional community use but not allocated by the government: 247 029 hectares.
- Areas under contracts with forest owners (state agencies or enterprises): 902 662 hectares.
- In the northern central provinces, each household spends on average 50.4 labour days/year on tree planting, protection and NWFP harvesting (Table 9).

Table 9. Labour days on allocated forest and forest land

| Areas | Labour days | |
|-------------------------|---------------------------|--------------------------|
| | Labour day/household/year | Labour day/hectares/year |
| Mountainous areas | 27 | 0.6 |
| Mid-elevation areas | 52.3 | 3 |
| Coastal plain areas | 72.3 | 17.2 |
| Average for 6 provinces | 50.4 | 2.2 |

Source: Nguyen Van Son (2008).

As a result, forest cover in these provinces has increased considerably (Table 10).

Table 10. Forest cover after allocating forest and forest land for six northern central provinces

| Areas | Type of land | At allocation point (%) | After 10 years (%) |
|-------------------------|--------------|-------------------------|--------------------|
| Mountainous areas | Forested | 60.9 | 81 |
| | Unforested | 39.1 | 19 |
| Mid-elevation areas | Forested | 35.6 | 89.1 |
| | Unforested | 64.4 | 10.9 |
| Coastal hill areas | Forested | 75.8 | 100 |
| | Unforested | 24.2 | 0 |
| Average for 6 provinces | Forested | 57.43 | 88.8 |
| | Unforested | 42.0 | 11.2 |

Source: Nguyen Van Son (2008).

For income generation, consolidated data for the whole country are not available, but the research in six northern central provinces has confirmed that on average after ten years, the contribution from allocated land and forests has increased household income by approximately 15-20 percent. The data also indicated the contribution of various sectors to household income after ten years of forest and forest land allocation for the six north central provinces; forestry contributed 22.6 percent, whereas agriculture contributed 43.7 percent, services 8.5 percent and others 25.2 percent (Nguyen Van Son 2008).

To promote continuation of the forest land allocation programme, the Ministry of Agriculture and Rural Development (MARD) has evolved a forest land and forest allocation project for 2007 to 2020 according to Decision No 2740/BNN-KL. As such, by 2010, Viet Nam will have completed allocation and leasing of 12.6 million hectares of forest and forest land to different economic sectors for forest protection and development.

From this analysis of the current status of forest land and implementation of the National Forestry Development Strategy for 2006-2020, it is clear that land for forest production is still abundant, available and ready for investment.

Current status of the labour force nationwide and in the forestry sector

According to the results of an evaluation (www.Xaluan.com) by The Japanese Enhance Trade Organization (JETRO) on the business environment in Viet Nam, the country is the best site for production and attracting investment from Japan in Asia. The report confirmed that Japanese producers in Viet Nam were confident about business prospects in 2008. The evaluation revealed that 77.8 percent of Japanese production companies in Viet Nam reported profitability; 92.6 percent of Japanese production companies had plans to increase investments and diversify products in Viet Nam in the next one to two years. Part of the reason for this attractiveness is that Viet Nam has the most competitive labour costs in Asia.

Current status of human resources in the forestry sector

Currently there are about 91 000 people with forestry skills working in the agriculture and rural development industry, primarily at government levels (ministries, provinces, districts), in forest management and protection boards and forest law execution agencies, non-profit organizations (institutes, universities, national parks, protected areas) and in 400 forestry enterprises. About 23 000 persons have university degrees, 28 000 persons have technical diplomas and there are about 40 000 technical workers (DOF MARD 2007). These people work in three blocks: state management, non-profit organizations and production.

According to the Reform of Forestry Administration System project run by MARD, the current status of human resources in the forestry sector is as follows:

- Approximately 70 000 persons (excluding forest rangers) work in forestry; this is considered sufficient to carry out required tasks. However, there is a major deficit in forestry skills at district and commune levels.
- About 250 000 persons are estimated to work in wood processing; they are mainly concentrated in wood-processing areas like Binh Duong and central provinces. With the boom in wood processing in the last few years, the labour force in this industry has increased dramatically.
- In general, the cost of labour in Viet Nam is lower than in other countries in the region, and skilled labour is widely available. However, it is clear that this competitive advantage is declining because the minimum wage is rising and Viet Nam is becoming a medium income country.
- The quality and quantity of workers in the wood-processing industry do not meet the requirements of the sector. Currently, there is a shortage of professional skills such as in machinery operation.

Tax policy in the forestry sector

Land tax

The tax rate is 2 percent of the value of land-use rights transactions. The price of land-use rights is adjusted from the market and is not lower than the price determined by authorized agencies.

According to the Tax Law, 1994 (revised in 1999) on transfer of land-use rights, many priorities are given to forestry land. Items 3 and 4 of provision 14 in the Land Law state that:

- Transfer of land-use rights in remote, rural mountainous and island communes is determined by the government.
- Transfer of agricultural, forestry, aquaculture and salt production land is allowed to meet practical cultivation situations.
- Organizations receiving allocated forest land without paying land-use fees or paying land-use fees from the state budget, cannot sell their land-use rights.
- Economic organizations, households and individuals with leased land can carry out leased land-use rights concession; receivers of leased land-use rights are to have a rental contract stating paid amounts up to the termination of the land rent.

- Besides the land-use rights concession fee, the government determines a transaction fee of 1 percent of the land-use rights price.

Tax on natural resource use (Decree #164/2003/ND-CP, 2003)

Sales tax does not apply to timber products legally harvested from plantations and non-timber products from natural forests.

The tax rates on exploitation of natural resources from natural forests are:

| | |
|---|-----------------|
| First class timber | 40 percent |
| Second class timber | 35 percent |
| Third and fourth class timber | 25 percent |
| Fifth, sixth, seventh and eighth class timber | 15 percent |
| Medicinal herbs | 5 to 15 percent |
| Aloe wood, Codonopsis | 25 percent |
| Other products | 5 to 20 percent |

Import tax (Law on Import and Export, 2005)

For enterprises investing in forest product processing (except timber) that use local materials and export over 50 percent of their products, import tax is exempted to encourage reinvestment in equipment.

Legally imported plant varieties and animal breeds to implement forestry projects are tax-free. The import tax rate in accordance with the Common Effective Preferential Tariff/ASEAN Free Trade Area (CEPT/AFTA) agreement for 2006-2013 is zero for timber, timber products and charcoal, but 5 percent for chip boards, panels and interior furniture (Circular #128/2003/TT-BTC, 2003).

Business income tax

At present, the government is prioritizing business income tax for enterprises investing in forestry as follows:

- Enterprises investing in forest plantation, regenerated forest protection, forest product processing; services to forestry production (Category A) have a business income tax rate of 20 percent over ten years (Law on Import and Export, 2005).
- Enterprises operating in areas with poor socio-economic conditions (Category B) have a business income tax rate of 15 percent over 12 years counted from the beginning of the project; they are free of tax for three years counted from the taxing point and obtain a reduction of 50 percent of the tax rate for the next seven years (Law on Import and Export, 2005).
- If enterprises employ many workers of whom minorities occupy over 30 percent of the work force then the tax rate is reduced by 50 percent over nine years (Law on Import and Export, 2005).

When the special duration is over, these enterprises have to pay business income tax similar to others at 28 percent.

Import tariffs

Import tariffs on many products have declined but this mechanism will continue to be applied. Table 12 gives an approximate indication of different tax sources from 2001 to 2004.

Table 11. Total approximate amount of different tax sources (US\$ million)

| Year | 2001 | 2002 | 2003 | 2004 |
|---|------|------|------|------|
| From timber | 15 | 15 | 12 | 9 |
| From export and import taxes on non-timber products | 70 | 78 | 98 | 124 |
| Total | 85 | 93 | 110 | 133 |

Source: Le Trong Hung (2006a).

In the process of integrating with the world economy, the government is committed to providing the best conditions for investors. This evidenced by the following legislative items:

1. The Law on Enterprises, 2005 affirms the long duration and development of all types of enterprises. Rights related to asset ownership, investment capital and income are reserved by this law. Investors can find very clear and specific steps for enterprise establishment and other regulations that create convenient conditions for investment.
2. The Investment Law, 2006 declares that the state treats all investors, local or foreign, on an equal legal basis and creates favourable conditions for investment operations.

For the forestry sector, the government ensures investment in infrastructure, human resource development and fixed settlement that make investment in this sector more efficient and attractive.

Investment policies include support for technology transfer and training as well as support and encouragement for investment service development, investment in infrastructure for industrial zones, processing zones, high technology and economic zones and visa processing. This support system is essential for attracting foreign investors.

3. The Land Law, 2003 and other guiding documents. With the Land Law's approval in 2003 by the Vietnam Assembly, landowners have more rights that can make investors access land more easily. In the forestry sector, more land and forests have been allocated to organizations, households and individuals. Procedures for this land allocation are specified in this law. Another important factor is the issuance of land-use certificates. This makes landowners more confident in investing in forestry operations.

By joining the WTO, Viet Nam has committed to its regulations, making production more stable – another inducement for investors.

With approval of the Strategy of Forestry Development (2006-2020) in early 2007, the forestry sector has determined a roadmap for development. More land will be available for production, protection and special-use forests. The strategy also specifies opportunities for investment.

Constraints and challenges to private investment in the forestry sector

Policy aspects

Forestry development policies (related to investment) have contributed to the development of the sector in recent years, particularly to increased forest cover. Wood and other forest product-processing industries have evolved well to respond gradually to domestic and export demands. Forestry production activities have been changing dramatically, from state-owned forests under central planning to social forestry with the involvement of various economic sectors operating under a market economy.

Enforcement of the current forest development policies over the past few years, however, has revealed the following limitations:

- In the period of transfer to the market economy, forest management policy is still inappropriate insofar as the state directly manages 72 percent of the total area while local people and other economic sectors only manage 28 percent.
- The accessibility of land resources for forestry development by economic entities, particularly the private sector, is facing difficulties because most of the forest land area (more than 4 million hectares) is legally managed by state forest enterprises (SFEs) whose financial and production capacities are limited. Forest and land allocation to local people and other economic entities has been progressing slowly and guidelines and procedures for this process have to be improved.
- The implementation of loan and credit policies for investment in afforestation is still limited. In the last few years, the state has issued a number of policies offering preferential loans for afforestation. However, only a limited amount of funding for loans is available annually and only state-owned enterprises are able to access such funding sources. Moreover, as Viet Nam is entering a market economy, the regulatory function of SFEs will be reduced but they will still play an important role. Consequently, funds available for afforestation will come from more diverse sources (i.e., the private sector).

Land issues

There has been concern about the process for foreign and domestic investment in plantations. It is not clear to potential investors how this takes place and how an investor proceeds with investing. MARD encourages investment in plantations but provincial authorities need to be consulted regarding provincial regulations and land availability and also the willingness of landowners to cooperate. Land availability is important for investors.

According to the Ministry of Planning and Investment (MPI) if the capital investment is less than (US\$882 353) then MPI endorsement is not required, but if investment exceeds this amount official endorsement of the investment is required.

The main constraint faced by companies and other stakeholders is accessibility to land for plantations and processing operations. The PPCs have agreed to assist but it is difficult to secure unallocated land. Even though a company has government support and access to capital, access to land remains a problem. According to the Ministry of Natural Resources and Environment, it is difficult to gain access to land from farmers. Increasing access to land for plantation development at the expense of farmers will impoverish them further. Government procedures work well and are supportive of investment; however, implementation of the processes in the provinces does not always run so smoothly. Things may be done differently in the provinces despite the clarity of government policies. Furthermore, there are differences across provinces in terms of application of regulations and policies. This creates uncertainty for investors and increases transaction costs for investors. If the barriers seem too high from the outset then the investor will look for alternatives.

Access to land and land tenure systems. Many smallholder plots challenge the development of large-scale plantations. Investors will need access to land/forest resources of appropriate quality and size to reduce import dependency and to 'grow' the industry. In some cases, the investors have not been granted land-use rights.

It is difficult to get information on available land for plantation investment and development at national or provincial levels, which is a barrier to investment. However, the Department of Land Administration holds information on land and provincial land-use planning. Furthermore, each province is responsible for land-use planning. Each investor should consider this when making investment decisions.

The government has policies to support private sector development in the forestry sector. In some cases the real situation (in terms of implementation of these policies) at the provincial level differs from the policy statements of the central government. Much of the potentially available forest land is under the control of SFEs. In many cases land and forest resources are not being managed as effectively and efficiently as they could be.

Land fragmentation in forestry production means that each household cultivates on two or more separate areas or on small plots. This is a major constraint for plantation investors.

The reasons for land fragmentation include:

- Complex terrain (the most important reason).
- Land area funding is limited for allocation programmes; meanwhile the large number of households leads to the division of sizeable land areas into small plots so that every household can have a plot.
- People in rural areas often are accustomed to subsistence production; therefore, they tend to stay on their land plots even if they are small. Commercial production does not occur to them.
- Forestry production does not generate benefits for local people, therefore they do not pay much attention to efforts and investment in enlarging their land. These people are satisfied with the allocated land area.

Disadvantages of land fragmentation in forestry production:

- Limited mechanization in production leads to high costs in general. Le Trong Hung (2008b) reported that in 450 households in nine communes, no one used machinery for forestry production. The reasons being lack of financial resources, unsuitable terrain and the small area of the land plots.
- Land fragmentation leads to difficulties in management of communes and districts. Selling and buying of land-use rights is sometimes done illicitly.
- High costs of forestry production lead to low levels of competitiveness for forest products.
- Cooperation among households with regard to production is generally informal.

Violation of forest protection law and land conflicts

There is a need for protection of production forest – illegal logging is widespread but companies feel they do not have the means to stop such activities and ensure compliance with the law. The number of violation cases is still high (on average 37 073 cases/year) focusing on boundary and land conflicts (MARD 2007d).

Raw material supply

The domestic supplies of wood will be lower in the coming years. Domestic and imported wood prices have increased by up to 20 percent during the last five years.

Although there are currently 1.2 million hectares of plantation forests for production, Viet Nam still lacks sufficient forests to provide industrial raw materials. Forests are located far from markets and factories and forest productivity is not high.

Importing large timber is becoming more difficult. The export of wooden products is mostly based on the sources of imported wood materials. This is therefore a major challenge. Dependency on imported wood materials is likely to hamper the growth and profitability of the processing sector and erode comparative advantage over time.

Competitiveness and market issues

Formerly, the protection tariff was 40 percent, which was then reduced to 0 to 5 percent within the framework of the ASEAN Free Trade Agreement (AFTA) after joining the WTO. The commercialization of the production sector increases competitiveness and consequently only efficient and market-managed factories can survive and develop further.

Due to competition from major regional exporters – with the exception of Bai Bang – existing pulp and paper producers will come under extreme pressure from major regional (Chinese, Indonesian and Thai) exporters who can outcompete small mills on price, volume and quality (excluding furniture producers).

The current wood-processing sector is facing slow investments in technologies to improve efficiency. Some outmoded machinery for timber processing is still being imported from the People's Republic of China; some farmers are still using dated technology and practices

for plantation harvesting and management. Although new investments and modernized technologies have been provided, most factories operating in Viet Nam are generally less efficient and competitive than others in the international market.

There is still time for Viet Nam to upgrade administration, business and marketing skills among SFEs and in rural areas (women's participation is notable). Marketing activities have not been facilitated. The quality of sectoral and trade statistics is still low. Potential investors and producers are expecting better market information, in which long-term market forecasts and information on wood supplies and lands are accessible. Wood-processing centres are also in need of market information.

The shortage of wood will lead to decreased productivity of factories and consequently the production cost per unit will therefore be increased (assuming a non-import situation). Factories will have insufficient funds to invest in advanced technologies and improve their production operations. Many domestic factories will be closed and thus sectoral capacity will decline and workers will lose their jobs.

Investment environment issues

The shortage of investment funds in the private sector is restricting the development of the forest industry, except for wood product production. The local private financing sector is relatively small and paying attention to other sectors with less risk and faster profits. FDI (mainly from Japan, Republic of Korea, China, Singapore, Denmark, Taiwan P.O.C., Norway) and other joint-venture companies working in forest industries is still limited to wooden product production, particle board and pulp. The forest industries can only accelerate their growth rate if investors feel secure, market information is accessible, policy for the wood-processing industry is available and they collaborate to ensure long-term sustainable wood supplies to respond to sectoral demands. A stable macroeconomy, minimized bureaucracy and creating a safe investment environment are key factors to attract foreign investments.

Certification issues

Only a few companies in Viet Nam are accredited to conduct certification assessments; furthermore, the market for certification services is not fully developed in Viet Nam. Many of the accredited certification companies will not invest in Viet Nam until the market improves but the market will not improve until demand for certification develops. Currently the cost of certification is prohibitive for forestry enterprises. They are not of a size that justifies the expense of becoming certified. It is debatable whether the benefits derived from certification justify the investment required to become certified. The need for skills development in the sector to develop capacity to achieve certification standards is another issue.

SFE equitization issues

Currently, SFEs manage most natural production forests in Viet Nam. The prime minister has stated that all state-owned enterprises should be equitized by 2010. At present, the schedule for equitization of SFEs is quite clearly designed, so piloting of SFE equitization will commence.

The involvement of private equity companies in the forestry sector is possible but the approach would have to be a whole-of-supply-chain strategy. The focus would be on plantations, wood-processing and transportation aspects of the supply chain rather than just one aspect such as plantations. Indochina Capital (ICC) is investigating this approach in the forestry sector. ICC has worked closely with the Vietnam Rubber Corporation to develop the various parts of the supply chain, including, for example, exploration of value-added industries such as tyre manufacturing. The author (Le Trong Hung) suggested that joint stock companies (JSCs) should be set up to invest in and establish plantations for the forestry sector. There is a need to get farmers involved in JSCs, which apply modern management, harvesting, and processing techniques to improve forest management and to ensure high quality raw materials.

Tax issues

There are differences across provinces in relation to domestic tax rates and tax exemptions. Potential investors should consult with the Central Tax office as well as the respective province.

Human resource issues

Training is needed for workers and middle managers to improve productivity and efficiency. Regarding vocational training, low labour costs have quality implications (new employees need basic training). There is a lack of highly qualified professionals, technicians and skilled labour in the wood-working sector.

Investment issues

Regarding ownership of assets and property, there should be clear rules and regulations about ownership by foreign investors. Information is needed about the ownership of the investment and the controls/restrictions on foreign companies involved in plantation forestry. However, information systems for forest management and investment promotion are not adequate. The government recognizes the need to modernize these systems and has sought funding from the World Bank. There is difficulty in providing investors with information to assist them in making investment decisions.

Loans for farmers who want to invest in the forestry sector are not easy to secure. Domestic loans are devised for state and private enterprises. In response to a question on whether there are preferential loans for farmers, it was indicated that there are two applicable credit organizations with branches in all provinces.

For a summary of the overall investment conditions in Viet Nam (and in comparison to Lao PDR) refer to Appendix 1.

Solutions for removing constraints to private investment in the forestry sector

Integrated solutions are required to solve the key issues mentioned above and creating favourable conditions to carry out key proposed objectives. The paramount issue is to synergistically develop the forest plantation, wood-processing and wood production industries. This can only be done through planning with the wide participation of relevant stakeholders from the private and public sectors who are working on forest plantation, wood production and processing in order to develop a concrete roadmap to implement the long- and short-term objectives set out by the National Forestry Development Strategy. The market will provide more opportunities for the Vietnamese forest industry. The requirements for investment as well as the demand for wood are so great that the strategy must focus on creating favourable conditions, particularly attracting private investment and FDI to develop the sector and creating motivation to develop forest resources more effectively.

Key solutions for removing constraints to private investment in the forestry sector

Policy solutions

The government should update policies to support private sector development in the forestry sector such as ensuring a stable economic and forest policy environment; clear, enabling legislation and procedures in general for investing; and reducing bureaucracy to establish and operate businesses in general and in the forestry sector in particular.

- Concretize the National Forestry Strategy, 2006-2020 into practical and specific programmes.
- Facilitate land and forest allocation to organizations, households and individuals, including the development of standard procedures on land and forest allocation to provide guidelines to the local authorities.
- Enhance the role of the market in terms of removing the monopoly on wood commerce and reducing direct government investments in commercial activities of the forest industry; creating more favourable conditions for small ownerships, communities and the private sector in terms of forest plantations.
- Provision of specific guidelines for SFE equitization. This process could provide a substantial basis for private investment in production forest management.
- Strengthen reforms to simplify procedures on business registration, transportation, import and export pertaining to timber, and remove current monopolies on transportation/training.
- Limit the bureaucratic practices regarding the establishment and operation of new enterprises for easier investment execution.
- Provide and enforce policy strong enough to protect plantations without any discrimination on the type of investors.
- The government has to ensure simple, quick and transparent procedures to establish new businesses and obtain licences.

Land solutions

For attracting investment in forest plantation, property rights should be clear. For this purpose, land consolidation and accumulation are important solutions.

- Policy is needed to allow for land consolidation and accumulation for forestry production, similar to that of the agriculture sector.
- A better information system on prices of land-use rights, forest products, customers and legal documents is needed.
- Provision of directions or policies promoting market development or use rights of forest production land.
- Farmers are part of the solution; they should be offered appropriate incentives to encourage their involvement (to maintain and protect the land and the investment).

Strengthening the land allocation programme is also a solution and a condition as well for effective land use. Land allocation must be accelerated and land tenure improved (for example, clearly defined land-use rights) so potential investors have a better understanding of land availability for long-term and sustainable investments in forestry. Support from national and international private entities will allow forest owners to sell their products at equitable prices. For this purpose, the following actions should be taken:

- Updating policies and regulations related to land allocation and forest leasing as well as documents determining responsibilities, tasks and benefits.
- Protection, special-use and production forests should be planned in more detail to clarify areas for investment (production forest area only).
- Strengthen land allocation with regard to socio-economic planning of each commune.
- Provide guidelines on land-use right transactions such as selling, leasing and stakes in joint production.
- State development of information systems on forest product markets and forest production land-use rights.

Research-, science- and technology-related solutions

- In connection with rapid increased demands for production materials, non-timber pulp will continue to play an important role in paper industries. Further studies on the development potential of non-timber pulp production methodologies are required to address the structure, technology and competitiveness of the non-timber pulp industry as well as strengthening capacity to reduce pollution.
- Develop a standards system and issue national certificates (through the accredited laboratory system) to enhance the competitiveness of products.
- Encourage FDI and establish joint-venture companies, which are considered the gateway to technology transfer.
- Enhance studies to apply advanced technologies for forest plantations and the wood-processing industry.
- Respond to the hygiene and technical requirements required by export markets.
- Fund and implement a research programme on tree propagation and establish nurseries within communes to supply investors and farmers with seedlings.

Human resource solutions

- The expansion of the forest industry, improvement of product quality and application of advanced technologies all require qualified workers, technical supervisors and managers. Expand and improve capacity and facilities in forestry, wood-processing vocational training schools and training and education agencies to train workers and technicians.
- Enhance extension services to SFEs and encourage entrepreneurs to develop their businesses, products, processing capacity, quality inspection and marketing approaches.

Production and infrastructure solutions

- Expand the utilization of current resources from plantation forests to address the short-term objective of increasing material for the wood-processing industry by replacing low production forests with high production plantation forests in specific areas.
- Expand the investment in natural forests and establish more plantation forests to support wood product production.
- Mechanisms for mobilization of different stakeholders to invest in transportation improvement in the forestry sector.
- Good infrastructure: deep-sea ports, roads (as planned in the National Forestry Strategy), electricity supply, water and information/communication technologies are important factors for attracting private investment. The state must enhance these requirements.
- For small land areas, plantation companies should provide seeds for local people, sign advanced contracts to buy trees when mature and supply funds needed during the planting period. Support from the government is essential to ensure the agreements are workable.

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Appendix 1. Benchmarking hardwood fibre costs and investment conditions in Viet Nam and Lao PDR

| | Viet Nam | Lao PDR |
|--|---|--|
| Macroeconomic conditions | Stable growing economy | Relatively weak despite recent improvements |
| Overall investment environment | Good. Openness to FDI. Good legal framework. Time to start business 50 days and getting a licence 143 days. | Weak but improving. Just opening to FDI. Limited experience. Time to start business 198 days and getting a licence 208 days. |
| Market potential | Growing rapidly. Access to China, Japan, etc. | No domestic potential. |
| Landownership | Legislation improved, but still problems with tenure. Leaseholds allowed. | No private ownership; limited experience with concessions. Unclear policies and legislation |
| Access to land, security of raw material | No critical mass of plantations. Limited supply of large homogenous areas. High population density. | Some large homogenous areas available. Low population density. |
| Growing conditions, yield potential | Average; 20-23 m ³ /ha/year | Good, up to 30 m ³ /ha/year |
| Fibre costs at mill gate | > US\$30/m ³ | < US\$25/m ³ |
| Infrastructure | Most land in steep, remote areas. Good infrastructure in coastal areas, including ports. | Landlocked country. Weak infrastructure, but improving access to Thailand and Viet Nam. |
| Labour | Low cost, trained and educated labour. | Low labour costs. Shortage of trained labour |
| Track record in commercial forestry | Short track record. Limited commercial plantations and private industry. | Short track record. Limited commercial plantations and private industry. |

Source: Marko-FI Benchmarking Hardwood Fibre Costs (Pöyry, Indufor), cited in Katila, (2007).

The prospects for attracting increased investments in forestry may never have been higher: society is increasingly acknowledging the multiple benefits and functions of forests; demand for forest products is expanding rapidly; and institutional investors are seeking investment opportunities for the billions of US dollars amassed in their funds. So why isn't more private sector investment being made in forestry in the Asia-Pacific region, especially in developing countries? Why is it that investors continue to favour North America, Australia, New Zealand, Latin America and the European Union in their forestry investment decisions? And why are domestic investors in Asia and the Pacific largely avoiding the forestry sector?

Through a series of nine country case studies and regional analysis, *Growing green assets: Removing constraints to private sector investment in forestry in Asia and the Pacific* presents answers to these questions and provides guidance to policy-makers on approaches and priorities for removing key impediments and streamlining forestry investment in the region.

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