2006 Deforestation Intentions Survey

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Disclaimer

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Executive summary

A key aspect of New Zealand's climate change policy is to use the carbon dioxide absorbed by forests to offset increased greenhouse gas emissions from other sources. In order for Government to plan it needs better information on New Zealand's net position in respect to emissions from future deforestation.

This study was commissioned to:

1. Update deforestation intentions collected in a survey in late 2005;
2. Identify and include any new information sources on deforestation;
3. Quantify future deforestation broken down into the following time periods: 2006-2007; 2008-2012; and 2013-2020; and
4. Provide informed comment on the uncertainty around deforestation intentions.

The scope of this report is limited to New Zealand plantation forests.

The general approach taken was a structured review of the deforestation intentions of large-scale forest owners (companies with more than 10,000 ha of plantation forest), based on a telephone survey and other information gathering.

Results from the survey of large-scale forest owners were collated and interpreted into a Base Case. Allowance for deforestation by small-scale owners was made. An indicative profile of the area harvested by small-scale owners was generated based on the National Exotic Forest Description (NEFD) age-class distribution for this group of owners. A generic assumption was made that 80% of the area harvested by small-scale owners will be replanted (i.e. 20% deforestation).

Two alternative scenarios were developed to indicate the uncertainty about the base case forecast of deforestation:

(a) Accelerated deforestation & More
The rate of intended deforestation was accelerated. In addition, it was assumed that 30% of the area harvested by small-scale owners is deforested.

(b) Slower rate of deforestation & Less
The rate of intended deforestation was reduced. In addition, only area that is considered to be "past the point of no return" is assumed to deforested. For this scenario it was assumed that 95% of the area harvested by small-scale owners will be replanted (i.e. 5% deforestation).

Main findings of survey

A summary of results is presented in Table 1. The level of deforestation varies by region. Over two-thirds of deforestation by large-scale owners is forecast to take place in one region: the Central North Island.

Table 1: Forecast of plantation deforestation (thousand ha) for each scenario.

	2006 to 2007	***2008 to 2012***	***2013 to 2017***	***2018 to 2020***	***Total***
Base Case (large companies only)	23	42	21	8	94
Base Case (all owners)	25	50	31	15	121
Accelerated deforestation & More (all owners)	27	65	37	19	148
Slower rate & Less (all owners)	22	32	17	7	78

The Base Case forecast is based on current intentions. These reflect perceptions about land-use economics and other factors as they exist today. Clearly they are subject to change.

For the Base Case (large companies) it is estimated that 55% of conversion will be to dairy, 31% to sheep & beef, and 14% to lifestyle.

Despite a 20% deforestation rate being assumed for small-scale owners, this group of owners makes a relatively small contribution to deforestation. This is because the majority of area that will be harvested over the next 10 - 15 years, and hence be most susceptible to deforestation, is owned by relatively few large companies.

The total area of deforestation intended for 2006 to 2020 in the Base Case is similar to the estimate from the 2005 Deforestation Intentions Survey. However more deforestation is intended in early years and less in later years (Table 2).

Table 2: Comparison of deforestation intentions (thousand ha) with 2005 survey (Base Case all owners).

	2006 to 2007	***2008 to 2012***	***2013 to 2017***	***2018 to 2020***	***Total***
2006 Base Case (all owners)	25	50	31	15	121
2005 Base Case (all owners)	24	47	35	16	122

Introduction

Background
A key aspect of New Zealand’s climate change policy is to use the carbon dioxide absorbed by forests to offset increased greenhouse gas emissions from other sources. In order for Government to plan it needs better information on New Zealand’s net position in respect to emissions from future deforestation.

Objectives
The objectives of this report are to:
1. Update deforestation intentions collected in a survey in late 2005;
2. Identify and include any new information sources on deforestation;
3. Quantify future deforestation broken down into the following time periods: 2006-2007; 2008-2012; and 2013-20; and
4. Provide informed comment on the uncertainty around deforestation intentions.

The scope of this report is limited to New Zealand plantation forests.

What is deforestation?
Deforestation is defined in the Marrakesh Accord as “the direct human-induced conversion of forested land to non forested land".

Deforestation includes:
- A decision to not replant following harvesting with conversion to some other land use.
- Early liquidation of a forest (i.e. removing immature trees with conversion to some other land use).

Deforestation excludes:
- Forests harvested and replanted.
- Harvested forests that are not replanted but are left and expected to regenerate back into forest species.

Approach

The general approach followed was a structured review of the deforestation intentions of large-scale forest owners (owners with more than 10,000 ha of forest), based on a telephone survey and other information gathering. This approach was taken because:

- The New Zealand plantation forest estate is well understood in terms of ownership, land tenure and age-class.
- The majority of area that will be harvested over the next 10 - 15 years, and hence be most susceptible for deforestation, is owned by relatively few owners.
- Owners are generally open about their intentions.
- There is a large amount of information available from other sources in the forest industry that can be used to corroborate stated intentions.

The dominant role that the large-scale owners will play in the medium-term New Zealand plantation harvest is illustrated in Table 3. Although forest owners with over 10,000 ha account for 62% of the total plantation estate, they own 79% of plantations of age 16 years and older. There are relatively few owners in this category. It therefore makes sense to focus on their deforestation intentions.

Table 3: Plantation area by age-class and size of ownership [Source NEFD as at 2005].

Ownership class	1-5	6-10	11-15	16-20	21-25	26-30	>30	Total
> 10,000 ha	190 229	241 088	145 749	189 183	223 334	104 505	32 698	1 126 786
Other	118 750	213 437	204 164	52 903	48 824	31 354	14 962	684 394
Total	308 979	454 525	349 913	242 086	272 158	135 859	47 660	1 811 180

Large-scale forest owners (or managers) were contacted and asked about their deforestation intentions. In addition, individuals in other organisations were contacted to get their views.

The information received was collated and interpreted. It was then converted into a "best estimate" of future deforestation based on current intentions. Analysis was initially done separately for each of the existing 10 NEFD wood supply regions. Results were subsequently aggregated to a national level.

Limitations

Incomplete information
The general response to the telephone survey of the large companies was very good. Most individuals contacted were willing to provide information. However sometimes the information provided was incomplete because the company was not willing or able to provide details. For example:

- Some companies were prepared to give a general overview of their intentions but were not prepared to provide detailed information on their harvesting (and hence deforestation) profile.
- Some companies are still 10 years away from harvesting. Understandably, their intentions are still unclear.
- Ownership of some forest is in the process of changing.
- Some forests are grown on land under a single rotation lease. The replanting decision will be made by the land owner rather than the current crop owner.
- Some land where forestry is the indicated highest and best land-use is currently unplanted following harvest because the land owner has higher expectations about land rental than potential investors for the next forest rotation. It is unclear whether (and when) agreement will be reached.

Inconsistent information
The information obtained from different sources was not always consistent. For example:

- Some information was for a calendar year, some was for a March year, while some was for a June year.
- There may be differences between the year in which land is sold and the year in which the crop on the land is harvested.

Current intentions
In my previous report "Review of methodology options to forecast future deforestation" I made the observation "a limitation that applies to all approaches is that forecasts are likely to be biased by the current situation or what has occurred in the recent past. Whichever approach is used, it will be difficult to accurately forecast deforestation in New Zealand."

This forecast is based on current intentions. These reflect perceptions about land-use economics and other factors as they exist today. Clearly they are subject to change.

Results

The results presented are the area that was identified as likely to be deforested by large companies.

Northland

The area that is expected to be deforested in Northland between 2006 and 2020 is about 7500 ha. Deforestation includes area that will be converted to sheep & beef agriculture, dairy and lifestyle.

Auckland

The area that is expected to be deforested in the Auckland region between 2006 and 2020 is about 1000 ha. Conversion is primarily for lifestyle.

Central North Island

The area that is expected to be deforested in the Central North Island between 2006 and 2020 is about 65,000 ha. Conversion is primarily to dairy and sheep & beef.

East Coast

There is no intention by large-scale forest owners to deforest any area in the East Coast region. There is a de facto requirement to replant most plantations in the Gisborne District. On vulnerable country, the Gisborne District Plan requires a resource consent to clearfell (treated as vegetation clearance). Typically a condition of the consent is a requirement for replanting at a certain rate within a certain period. In addition, plantations on Crown Forest Licence (CFL) land have a replanting covenant.

One case of about 1100 ha was reported where, because ongoing forestry is uneconomic, it is not intended to replant radiata pine following harvest. Land will either be allowed to revert to native forest or planted using soil conservation tree species.

Hawkes Bay

The area that is expected to be deforested in the Hawkes Bay between 2006 and 2020 is about 1300 ha. Conversion is primarily to lifestyle and sheep & beef agriculture.

Southern North Island

The area that is expected to be deforested in the Southern North Island between 2006 and 2020 is about 400 ha. Conversion is primarily to dairy.

Nelson/Marlborough

The area that is expected to be deforested in Nelson and Marlborough between 2006 and 2020 is about 2300 ha. Conversion is primarily to lifestyle and sheep & beef agriculture.

Canterbury/West Coast

The area that is expected to be deforested in Canterbury and the West Coast between 2006 and 2020 is about 13,000 ha. Conversion is primarily to dairy, followed by sheep & beef, with some to lifestyle.

Otago/Southland

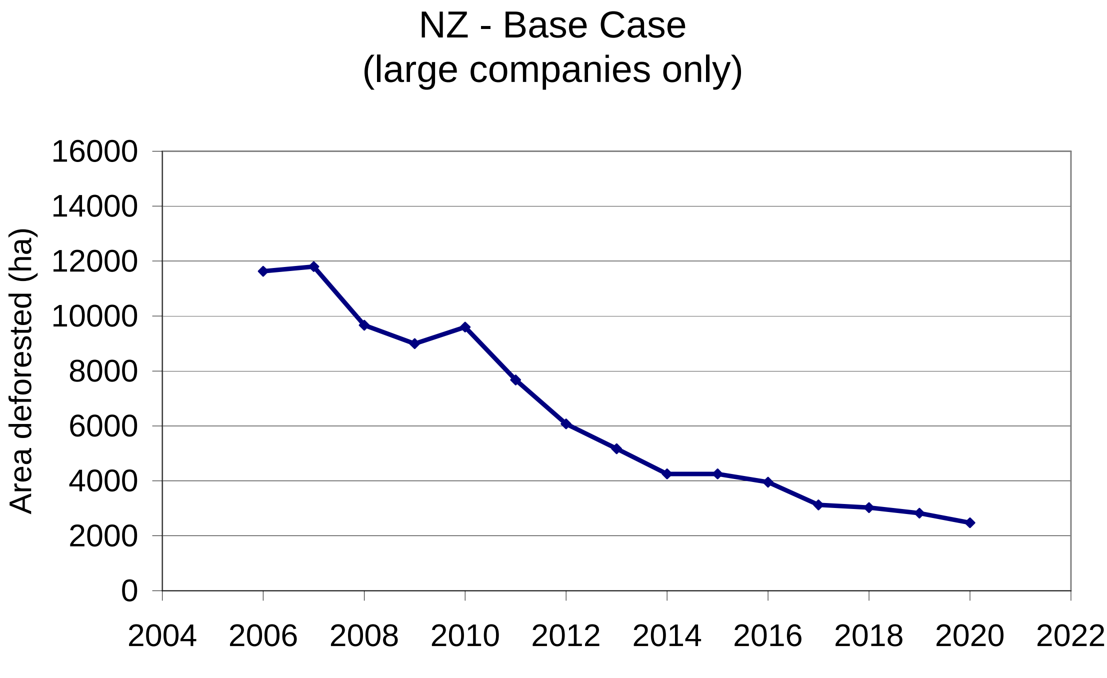
The area that is expected to be deforested in Otago and Southland between 2006 and 2020 is about 3900 ha. Conversion is primarily to dairy with some to lifestyle.

New Zealand combined results

The combined deforestation intentions of large companies are shown in Fig 1. There is a clear trend for the area deforested annually to reduce over time. This could reflect:

- Companies attempting to deforest ahead of Commitment Period 1 and the potential imposition of a liability.
- Companies liquidating young stands to accelerate the conversion process for commercial reasons.
- Companies focusing on the most suitable areas for conversion in the short term with long term conversion yet to be evaluated.

Fig. 1: Base case deforestation forecast for New Zealand (large companies only).



What land-use is area being converted into?

Based on the information provided, it is possible to make a broad estimate of the land-use into which deforested land is being converted. It is evident that conversion to dairy and, to a lesser extent, sheep & beef is driving deforestation (Table 4).

Table 4: Land-use into which area deforested is being converted (figures are only approximate)

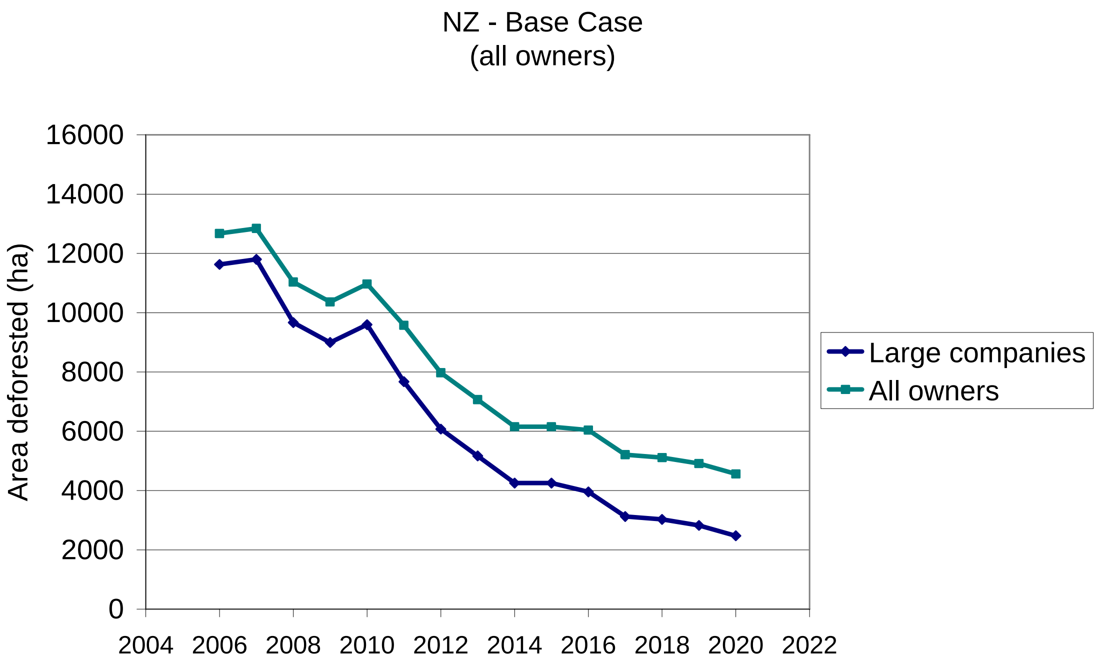
Land-use	***Area***	***%***
Dairy	52,000	55
Sheep & beef	29,000	31
Lifestyle	13,000	14
Total	94,000	

What are small-scale forest owners doing?
It is difficult to gauge the intentions of small-scale owners because harvest levels are low at present, not just because of the relative immaturity of their component of the estate but also because many are holding off harvesting because log prices have been poor.

For this analysis, a profile of the area harvested by small-scale owners was generated based on the NEFD age-class distribution for this group of owners and MAF estimates of harvest for 2005. A generic assumption was made that 80% of the area harvested by small-scale owners will be replanted (i.e. 20% deforestation).

Fig. 2 shows that the deforestation intentions of large companies dominate the overall level of deforestation.

Fig. 2: Base case deforestation forecast for New Zealand (all owners). (Large company intentions & small-scale owners @ 20% deforestation.)



Successful Maori land claims

Kaingaroa Timberlands operates under Crown Forest Licences. Under these the licensee is required to replant. The land has been subject to Maori land claim:

- Settlement has been reached with Ngati Awa.
- The Crown has recently reached agreement with Te Arawa iwi affiliated with the Kaihautu Executive Council. Other Te Arawa iwi have remaining interests in the forest but are not in negotiation with the Crown.
- Ngati Manawa and Ngati Whare are negotiating towards agreements in principle with the Crown. These are likely to be settled within the next 3 to 5 years.
- Tuhoe are currently in a mediation process and are likely to enter negotiations in the near future. It is likely to take about 5 years before settlement.
- Claims from Ngati Tuwharetoa are less advanced and they are not in direct negotiations with the Crown. It is likely to take 5 to 10 years before settlement occurs.

Forestry has continued to date on the land returned to Ngati Awa.

Under the Te Arawa Deed of Settlement, Te Arawa will receive licenced Crown forest land to the value of $36 million. They also have the opportunity to purchase the remainder of a 50,000 hectare area of licensed Crown forest land. However “A statutory covenant will apply over the 50,000 hectares of licensed Crown forest land which will require the land to remain in forestry for a defined period of time.”

The defined period of time is 28 years following the return of land. Land will be returned to Te Arawa following harvesting of the existing crop by Kaingaroa Timberlands. Consequently there will be no deforestation of the 50,000 ha for at least the next 28 years.

Scenarios to show uncertainty of estimates

There is considerable uncertainty about the estimates of future deforestation. For two of the larger deforestation projects, the rate (rather than the ultimate scale) of deforestation is dependent on ongoing negotiations between the land-owner and the crop-owner.

For some projects the actual scale of deforestation will depend on the relative land-use economics of forestry versus dairy and sheep & beef. If the relative profitability of forestry improves, a portion of the area currently intended for deforestation is likely to stay in forestry. Conversely, greater deforestation is possible if the relative profitability of forestry declines.

There are other factors besides land-use economics that could reduce the level of deforestation. Central and local government are increasingly recognising the environmental externalities associated with different land-uses.

Externalities are largely positive for forestry and include:
- Carbon sequestration.
- Erosion control.
- Enhanced water quality.
- Improved flood hydrology.

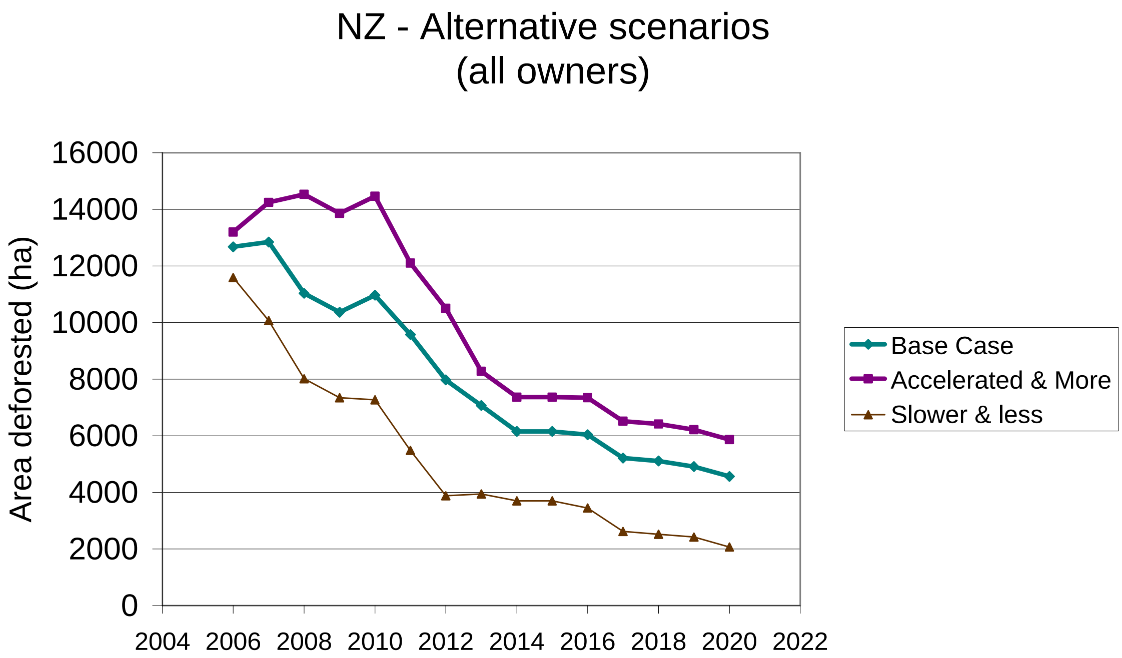
Externalities for agriculture are largely negative and include:
- Methane emissions.
- Limited erosion control.
- Nutrients in water + lower clarity.
- Poorer flood hydrology.

Alternative rates and scales of deforestation
Two alternative scenarios were developed (Fig. 3) to indicate the uncertainty about the base case forecast of deforestation:

(a) Accelerated deforestation & More
- The rate of deforestation was accelerated for the two large projects that are under negotiation.
- In addition, it was assumed that 30% of the area harvested by small-scale owners is deforested.

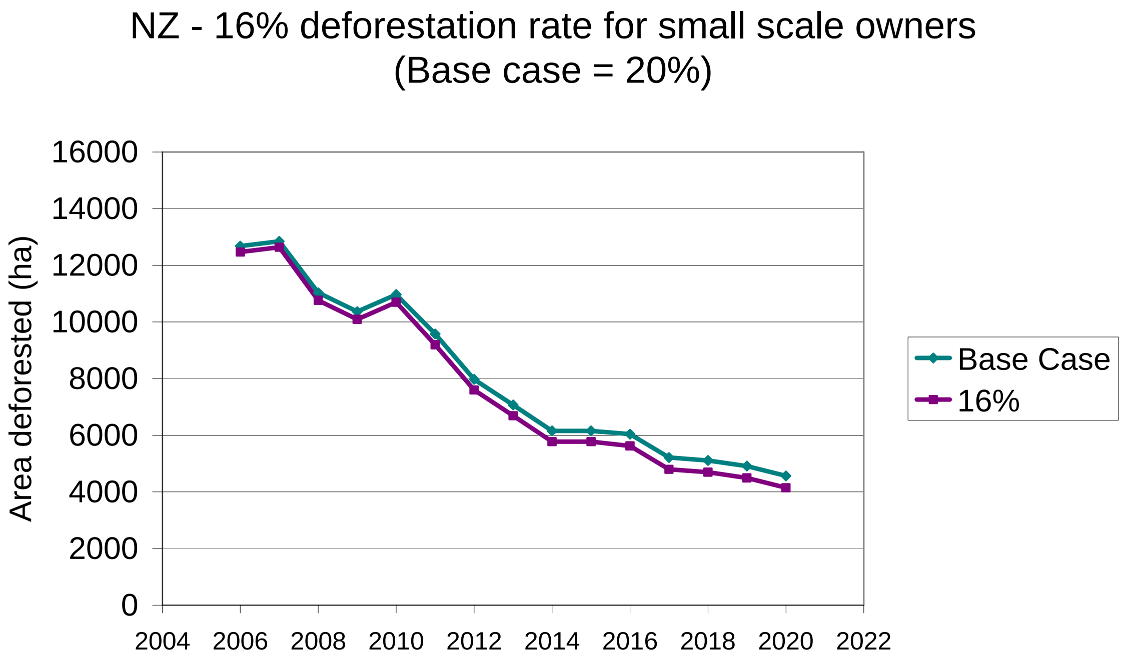
(b) Slower rate of deforestation & Less
- The rate of deforestation was reduced for the two large projects that are under negotiation.
- In addition, only area that is considered to be “past the point of no return” is assumed to deforested.
- It was assumed that 95% of the area harvested by small-scale owners will be replanted (i.e. 5% deforestation).

Fig. 3: Alternative scenarios compared to the Base Case scenario (all owners).



Sensitivity to deforestation rate of small-scale owners
A further scenario was evaluated to show the impact of changing the deforestation rate for small-scale owners. Returns for the 2005 NEFD indicate that 16% of the area harvested by small-scale owners was deforested. Fig. 4 shows that changing the base case assumption of 20% deforestation to 16% has a small impact.

Fig. 4: Impact of changing the deforestation rate for small-scale owners from 20% to 16%. (The graph shows the area deforested by all owners).

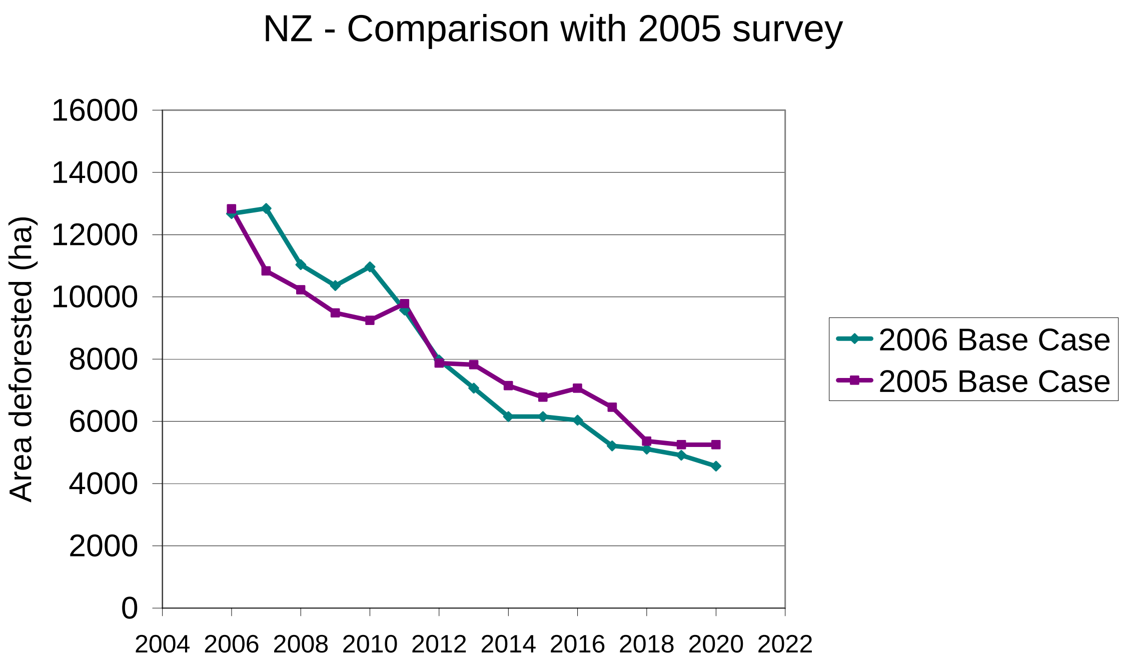


Comparison with 2005 Deforestation Intentions Survey

Deforestation intentions have changed since 2005 for a number of companies. Seven new deforestation projects were identified. Conversely, four of the deforestation projects identified in the 2005 survey will be replanted. In addition there were examples of companies changing the expected timing of deforestation projects – both forwards and backwards.

Overall, the total area expected to be deforested between 2006 and 2020 is similar. However the net effect is that deforestation has been shifted forward in time (Fig. 5).

Fig. 5: Comparison of the 2006 survey results with those from the 2005 survey (Comparison of Base Cases).



Appendix A:

Summary of the 2005 Deforestation Intentions Survey

A key aspect of New Zealand's climate change policy is to use the carbon dioxide absorbed by forests to offset increased greenhouse gas emissions from other sources. In order for Government to plan it needs better information on New Zealand's net position in respect to emissions from future deforestation.

This study was commissioned to:
1. Forecast future deforestation broken down into the following time periods: 2005-2007; 2008-2012; and 2013-2020.
2. Provide informed comment on the uncertainty around deforestation intentions.
3. Seek to understand how deforestation intentions have changed since an earlier survey was run in 2003.

The scope of this report is limited to New Zealand plantation forests.

The general approach taken was a structured review of the deforestation intentions of large-scale forest owners (the 24 large companies with more than 10,000 ha of plantation forest), based on a telephone survey and other information gathering.

Results from the survey of large-scale forest owners were collated and interpreted into a Base Case. Allowance for deforestation by small-scale owners was made. An indicative profile of the area harvested by small-scale owners was generated based on the National Exotic Forest Description (NEFD) age-class distribution for this group of owners. A generic assumption was made that 80% of the area harvested by small-scale owners will be replanted (i.e. 20% deforestation).

Two alternative scenarios were generated:
- An indicative Maori land claim scenario in which it was assumed that 3000 ha/year of Kaingaroa Forest would be deforested from 2009 on.
- A Brighter forestry future scenario in which only those deforestation projects deemed to be past the point of no return were included. It was assumed that 95% of the area harvested by small-scale owners will be replanted (i.e. 5% deforestation).

Main findings of survey
A summary of results is presented in Table 5. The level of deforestation varies by region. Most deforestation is taking place in two regions: Central North Island and Canterbury.

Table 5: Forecast of plantation deforestation (thousand ha) for each scenario.

	2005 to 2007	***2008 to 2012***	***2013 to 2017***	***2018 to 2020***	***Total***
Base Case (large companies only)	34	40	27	10	111
Base Case (all owners)	36	47	35	16	134
Indicative Maori land claim scenario (all owners)	36	59	50	25	170
Brighter forestry future scenario (all owners)	33	26	15	4	78

The Base Case forecast is based on current intentions. These reflect perceptions about land-use economics and other factors as they exist today. Clearly they are subject to change.

For the Base Case (large companies) it is estimated that 57% of conversion will be to dairy, 35% to sheep & beef, and 8% to lifestyle.

Despite a high deforestation rate (20%) being assumed for small-scale owners, this group of owners makes a relatively small contribution to deforestation. This is because the majority of area that will be harvested over the next 10 - 15 years, and hence be most susceptible to deforestation, is owned by relatively few large companies.

Results for the Base Case are substantially lower than estimates from the 2003 Deforestation Intentions Survey. This may be because company perceptions and plans have changed. However it is more likely that, because the 2003 survey was carried out in a highly political environment, some of the respondents used the survey to send a message to government rather than express their true deforestation intentions.