

4.6 Land-use change and forestry

Summary

This section:

- explains what a carbon sink is and summarises the Kyoto Protocol rules related to carbon sinks
- provides information on forestry in New Zealand, including the co-benefits resulting from forestry, such as soil conservation
- discusses the uncertainty around the rules related to land-use change and forestry land and the difficulties this creates for determining the benefits and liabilities for New Zealand beyond 2012
- discusses the impact this uncertainty about future rules has on developing robust policies
- considers some policy criteria to assist decision-making for forestry climate change policy
- summarises and assesses current Government forestry climate change policy
- summarises and assesses alternative policy options for forestry.

It concludes:

- the current policy does not send strong, positive signals on land-use change decisions, and anecdotal information suggests that uncertainty about putting the deforestation cap into operation is contributing to land-use change prior to CP1
- for equity and efficiency reasons, it is preferable that climate change policies are land-use sector neutral and do not distort investment decisions
- outlines some options to improve the lack of climate change signals to land managers. These findings will form the basis of a work programme for further analysis
- if certain policy options are to be implemented prior to the commitment period, work should begin immediately
- better information is required to discern the future planting and deforestation intentions of foresters and to understand the decision-making process of land-use change in New Zealand.

4.6.1 Current policies and broader context - recap

Sinks are any natural or man-made systems that absorb and store greenhouse gases, primarily CO₂, from the atmosphere. To be considered a sink, a system must be absorbing more CO₂ than it is releasing, so that the store of carbon is expanding. When a tree or forest is increasing in size, it absorbs CO₂ in the form of carbon (about half the dry weight of wood) in the process of increasing its biomass. A growing forest is a sink. Once the forest reaches maturity, its carbon density remains approximately constant because decay is releasing about the same volume of CO₂ as the forest is absorbing. This is termed a carbon “reservoir”.

Forestry activity can influence the amount of greenhouse gases in the atmosphere because forests can act as both a sink and a source of emissions. Forest products can reduce global greenhouse gas levels when used as a substitute for other more energy intensive building materials like steel and concrete or as an energy source (biofuel) that displaces the use of fossil fuels.

The development of the international agreement on sinks has evolved to cover emissions and removals of greenhouse gases resulting from land use, land-use change and forestry (LULUCF). Activities in the LULUCF sector can mitigate and/or contribute to climate change. The relevant Kyoto Protocol articles with respect to LULUCF are Articles 3.3 and 3.4. Further information on these articles is included in Annex 1.

Under Article 3.3, parties have decided that greenhouse gas removals and emissions through certain activities — namely, afforestation and reforestation since 1990 — can be used to meet a country’s emission targets. Conversely, activities that deplete forests, namely deforestation, are to be subtracted from the amount of emissions that an Annex I Party may emit over the commitment period. Article 3.4 enables parties to elect additional land-use activities.

New Zealand receives forest sink credits for the carbon sequestered during the commitment period. International reviewers will assess New Zealand’s system of determining how many credits we are entitled to.

Under Article 3.4, New Zealand can elect which additional Article 3.4 land use, land-use change and forestry activities, if any, it wishes to account for in CP1. The election of these activities is voluntary for Annex I Parties such as New Zealand.

Slightly anomalous rules exist within the Kyoto Protocol in terms of the treatment between Kyoto forests (planted after 1 January 1990) and non-Kyoto forests (planted prior to 1 January 1990). This distinction is, to some extent, artificial.

These rules mean that New Zealand faces the liability associated with the deforestation (felling and not replanting) of non-Kyoto forests but does not face any liability associated with harvesting (felling and replanting) non-Kyoto forests. In contrast, however, New Zealand faces a liability associated with both the deforestation and harvesting of Kyoto forests.

There is one further major difference between the treatment of Kyoto forests and non-Kyoto forests under the Protocol. The liability faced by New Zealand on the harvesting of Kyoto forests is limited to the amount of carbon claimed previously from that forest. This does not apply to non-Kyoto forests.

On deforestation of a non-Kyoto forest, the entire carbon liability in the forest is faced by New Zealand. If a non-Kyoto forest is deforested prior to 2008, however, New Zealand does not face any liability associated with the deforestation (although New Zealand is liable for any resulting emissions from agriculture on that land).

The rules under Kyoto are complex and create uncertainty for forestry in the short term. In addition, there are a lot of unknowns about what the situation will be for forestry beyond 2012. This creates issues for managing the benefits and liabilities of forestry in the medium term out to 2020. Domestic policy, however, need not mirror the international rules under Kyoto (eg, removing the “since 1990” distinction between Kyoto and non-Kyoto forests), but should provide adequate signals on afforestation, reforestation and deforestation.

4.6.2 Incidence of liabilities – who should have property rights over forest sinks?

In the short term, it is expected that forest sink credits will offset harvesting and deforestation liabilities. New Zealand’s projection for sinks over CP1 is a surplus of 67.8Mt CO₂e.

In the medium-to-longer term, the high planting rates of the mid-1990s mean that, at harvest, there is a potential for New Zealand’s net sink position to be in deficit (ie, harvesting liabilities will be greater than the credits earned from sequestration). This deficit assumes that current Kyoto rules remain static or very similar over the medium term and that New Zealand is unable to gain a more favourable agreement (relative to the present agreement) in the future. Under these assumptions, a sustained planting programme would serve only to dampen or push this deficit out into the future.

The long-term climate change benefits of new plantings to New Zealand include:

- a reduction in agricultural emissions (assuming that the land planted was in agricultural production and not scrub)
- immediate sink credits in the event that New Zealand is able to gain a more favourable agreement (relative to the present agreement) in the future
- an ongoing stock of carbon, if the land is replanted and remains in forestry.

Forests are also valued for more than sequestering and storing carbon. Other co-benefits resulting from forestry include:

- soil conservation, catchment management and water quality, and biodiversity
- substitute materials for more emissions-intensive products
- a source of bioenergy.

4.6.3 Managing future liabilities

In 2002 and 2004, the Government made decisions on climate change and forestry, including to:

- retain all the sink credits from Kyoto forests and their associated liabilities, at least for CP1, and:
 - Kyoto forest owners will not face any deforestation or harvesting liabilities at any stage where the Crown has retained the forest sink credit asset
 - should the Government decide to devolve forest sink credits in future, then associated deforestation and harvesting liabilities would only be devolved in proportion to the credits received by the Kyoto forest owner
- assign a proportion of the credits (or an equivalent value) to provide incentives for establishing and enhancing sinks
- retain deforestation liabilities of the non-Kyoto forests, provided these remain within a cap equal to 21Mt CO₂e. This is the carbon that would be released by the deforestation of approximately 10% of the area of forest reaching maturity during CP1. In relation to non-Kyoto forests, the Government will:
 - consider its policy options (in the unlikely event that significant deforestation may exceed expectations) to manage emissions within the cap. This includes addressing issues such as:
 - how deforestation rights within the cap will be allocated
 - how to monitor and enforce the deforestation cap
 - what actions the Government will take if the cap is exceeded
 - consider the deforestation policies for non-Kyoto forests in the period after CP1 as part of the scheduled Review of Climate Change Policies (2007 and 2010), after the future international rules on forests in the Kyoto Protocol are further clarified
- establish a mechanism to encourage the establishment of permanent protection sinks (the Permanent Forest Sinks Initiative (PSFI)). The initiative has been proposed to encourage permanently converting land to forest. Legislation is currently before the House to implement the initiative
- consider further whether it should elect any additional sink activities under Article 3.4 of the Kyoto Protocol (eg, forest management, revegetation, crop and grazing land management) before 2007 (depending on availability of carbon accounting data).

The Forest Industry Framework Agreement (now the Forest Industry Development Agenda (FIDA)) has also been funded and covers issues such as market development, market access, wood design, labour, skills and bioenergy.

Work has also commenced on implementing New Zealand's Carbon Accounting System (NZCAS) to ensure New Zealand's ability to claim sink credits and account for deforestation.

Further information on the current forestry climate change policy package is included in Annex 1.

4.6.4 The role of non-climate policies in a sustainable forestry framework

In addition to the above climate change policies, there are other policies and programmes that contribute to positive climate change outcomes from forestry. These include the East Coast Forestry Project; implementation of the Biosecurity Act 1993; and sustainable development (such as the RMA and soil conservation and land management work undertaken by regional councils).

Many other non-climate policies and programmes could assist any move to fuller carbon accounting. These include: implementation of Part IIIA of the Forests Act 1949; work by the Queen Elizabeth the Second National Trust; and forestry research by Crown Research Institutes, universities and the Sustainable Farming Fund, investigating such issues as biosecurity, conservation biology, forest ecology, forest soils and silviculture of indigenous forests. Some of these may have a greater role in future should international negotiations require the accounting of all land-use activities.

Further information on the non-climate change policies is included in Annex 2.

4.6.5 Policy criteria

Regardless of the uncertainties outlined in the previous section about current and future arrangements on land-use change and forestry, policy criteria are needed to guide the inclusion of climate change considerations into land-use change and forestry decisions out to 2020. The policy criteria are not mutually exclusive and achieving some of them will help to achieve other criteria.

The consideration of forestry and land-use change in the medium term (to 2020) should involve policy choices based on:

- appropriate land-use signals
- reduction in uncertainty
- resilience
- equity
- sector acceptance
- maximising co-benefits
- minimising Crown risks
- complying with international obligations
- feasibility.

These criteria are outlined in greater detail in Annex 3.

4.6.6 Assessment of existing policy

The existing forestry policy has been assessed against the policy criteria outlined above.

Appropriate land-use signals: The existing policy sends limited positive signals on land-use decisions. The policy sends limited positive signals to the owners of Kyoto forests on reforestation or deforestation, because all the benefits and liabilities remain with the Government. However, the PFSI when implemented will send positive signals for continuous canopy forestry, which generally also caters to longer rotation species than *radiata* pine.

For non-Kyoto forests, the uncertainty arising from the deforestation cap sends a signal that there are potential costs with deforestation, and this should be taken into account. The cap also creates incentives to bring deforestation intentions forward to before CP1 or defer them until CP2 to avoid this cost.

Reduction of uncertainty: The Government has made clear policy statements regarding Kyoto forest owners not facing any deforestation liability or harvesting liabilities at any stage where the Crown has retained the forest sink credit asset.

Similarly, with regard to non-Kyoto forests, the Government has stated it will cover deforestation up to 21Mt CO₂e of emissions over 2008 to 2012. There is anecdotal evidence that the uncertainty around putting the cap into operation is leading to a higher rate of deforestation than the historic average. While current policy provides some certainty for Government because the maximum level of the deforestation liability is set at 21Mt CO₂e, non-Kyoto forest owners face uncertainties over how the deforestation cap will be put into operation.

Resilience: The lack of positive signals means that the existing policy is likely to be ineffective, over the long term. This is particularly true when agriculture does not face the costs of its decision-making.

Equity: Current policy treats Kyoto forests and non-Kyoto forests differently. If the deforestation cap is put into operation, non-Kyoto forest owners will face a potential constraint not borne by Kyoto forest owners. This raises some serious equity issues for foresters who planted their forests 30 years ago (intending to deforest after one rotation) and did so without any knowledge of potential constraints on future land-use changes.

There are equity issues between forestry and agriculture, because the change in land use (intensification into agriculture from forestry) for the owners of Kyoto forests raises a liability from the emissions (deforestation) that intensification, eg, from sheep and beef to dairying, does not face.

Sector acceptance: The acceptance of the current policy by the sector is low. The sector considers the current policy is encouraging foresters to deforest now to avoid any potential liability later.

The reaction among Kyoto forest owners varies. There is low acceptance from those who object to not receiving any value for the climate change benefits arising from their forests. To others, the current policy offers flexibility to make land-management decisions fairly freely.

Maximising co-benefits: The current policy does not send positive signals on the co-benefits of forestry (other than through the FIDA and PFSI).

Minimisation of Crown risks: The Crown's fiscal liabilities arising from the current policy are limited to 21Mt CO₂e from the deforestation cap (for CP1) and the associated decreases in carbon stocks in Kyoto forests. While the sink credit benefit from Kyoto forests outweighs the liabilities from carbon stock decreases, this only reduces the surplus sink component of New Zealand's net position.

Any pre-CP1 deforestation comes at minimal fiscal cost to New Zealand (aside from the decay of soil carbon that may occur during CP1), although there may be opportunity costs incurred through harvesting immature timber. There may also be increased greenhouse gas emissions in the longer term from the resulting land-use change (eg, from increased emissions from agriculture).

Feasibility: The current policy is feasible. Some transaction costs and compliance issues will arise for participants in the PFSI. Aside from participants in the PFSI, the only monitoring requirements are aligned with the monitoring and inventory compliance under the Kyoto Protocol. The current policy does have risks relating to long-term feasibility because of the lack of clarity around putting the deforestation cap into operation.

The assessment of the current policy is summarised below in Section 4.6.7.

4.6.7 Options

There are a range of options for the treatment of forest sink benefits and liabilities under a domestic policy setting for forestry. These options range from policies where the Government retains all benefits and liabilities, to those where the Government devolves all benefits and liabilities. Many other possibilities exist on the spectrum between these two extremes. The section on a New Zealand emissions trading scheme (Section 4.2.4) discusses how devolution of these benefits and liabilities might operate for forestry in an emissions trading scheme.

Five options (including a variant on the current policy) are assessed here. The options below present some possible scenarios, which are assessed against the policy criteria outlined above in Section 4.6.4.

- | | | |
|--------------|---|--|
| Option One | – | Government retains all Kyoto benefits and liabilities |
| Option Two | – | Payment for afforestation/reforestation, no devolution of liabilities and no deforestation cap |
| Option Three | – | The current policy, operationalisation of the deforestation cap and other policies to encourage new planting |
| Option Four | – | Deforestation charge/afforestation rebate |
| Option Five | – | Devolution of carbon benefits and liabilities. |

Option One – Government retains all Kyoto benefits and liabilities

Option 1A:

- no deforestation cap on non-Kyoto forests
- no climate change related policies to enhance sinks (eg, PFSI).

Option 1B:

- no deforestation cap on non-Kyoto forests
- retain climate change related policies to enhance sinks (eg, PFSI).

Option Two – Payment for afforestation/reforestation, no devolution of liabilities and no deforestation cap

This option involves a payment for the carbon value in the trees, to return some value from sink credits back to forest owners. The Government would retain all the Kyoto liabilities and benefits under this option, including liabilities associated with deforestation. The deforestation cap would be removed under this option.

This value returned to forest owners would be calculated by:

- The expected value of carbon credits from Kyoto forests in CP1 less
- The expected cost of liabilities of deforesting non-Kyoto forests in CP1 less
- The expected costs of monitoring incurred by the Crown.

Payment could be in respect of:

- all new plantings of Kyoto forests and replanting of non-Kyoto forests
- (and possibly) Kyoto forests that are already planted.

Other issues would need to be worked through, including the relationship between the price of carbon used under this option and any carbon charge elsewhere in the economy.

Option Three – The current policy, operationalisation of the deforestation cap and other policies to encourage new planting

This option is the same as the current policy discussed earlier in this section (4.6.3), but the deforestation cap is put into operation and additional policy is developed to enhance production forest sinks.

Despite the uncertainty over the status of sink credits post-CP1, New Zealand potentially can gain from a policy that develops and enhances sinks (taking into account wider co-benefits such as soil conservation). A sinks enhancement policy could have spin-offs not only for forestry, but for the environment and the economy.

Approaches to encourage or enhance the capabilities of New Zealand's forest sinks might include:

- establishing forestry joint ventures on Kyoto-compliant Maori land
- the Government purchasing and replanting land intended for deforestation during CP1
- afforestation of some lands transferred to the Department of Conservation as a result of high-country pastoral lease tenure review
- other initiatives aimed at raising the overall economic performance of the New Zealand forest industry
- extension of the East Coast Forestry Project model to other regions with local government assistance.

The deforestation cap could be put into operation through the following sub-options:

- **allocating rights and liabilities.** This could be implemented through a cap-and-trade system for deforestation rights, allocated through alternative mechanisms such as grandfathering, auctioning, direct sale and/or lottery. Forest owners could trade deforestation rights. The size of the pool of deforestation rights to be allocated could be based on the current cap or some other measure.
- **Negotiated Deforestation Agreements (NDAs).** These would establish a transitional arrangement for deforestation of pre-1990 forests. The effectiveness of such an approach would depend on the eligibility criteria for an NDA. To reduce compliance costs, it might be possible to have simplified arrangements or automatic exemptions for very small forest owners.

Option Four - Deforestation charge / afforestation rebate

This option entails a payment to forest owners to encourage afforestation/ reforestation coupled with a charge associated with deforestation. If the land-use change is from a more intensive use to less intensive use (eg, sheep and beef farming to forestry), the Crown would pay a rebate to recognise the reduced emissions and carbon absorbed by the trees. If the conversion is to a more intensive land use, eg, from forest to dairying, then a charge would be imposed.

For forest owners, the scheme offers recognition of carbon sequestration while falling short of full accounting for carbon (with the associated transaction costs). For landowners, the signal is that land-use change coupled with an increase in emissions from agriculture would incorporate carbon costs (albeit at a lesser cost than the full cost of carbon). Government might participate in the purchase of carbon, but equally, as in Australia, businesses could become voluntarily involved in order to offset their emissions. The option also shifts some liability associated with deforestation to forest owners.

The charge or incentive for land-use change could be based on a nominal value through to full accounting of the emissions associated with the incoming land use. This option would require a system for calculating the amount of carbon that would be released by deforestation or absorbed by sequestration.

A number of other issues would need to be worked through, including the additional policies that might be needed to complement this option. These would include considering:

- the need for legislation to define the property right
- the need for a cap on deforestation to give the Crown fiscal certainty
- the relationship between the price of carbon used under this option and any carbon charge elsewhere in the economy.

Option Five - Devolution of carbon benefits and liabilities

This option involves the Government devolving some or all responsibilities for the management of carbon to private entities – both benefits (carbon sequestration) and liabilities (decreases in carbon stocks).

The Government could:

- devolve a proportion of the carbon credits and related obligations to land/forestry rights owners and retain a proportion to hold or sell (to cover liabilities from defaulting owners); or
- devolve all carbon credits and related obligations.

Devolution could be mandatory or voluntary (eg, “opt-in” participation).

Any decision on the proportion of carbon credits to be held by the Government can only be made following decisions on the nature of the system to be implemented. This would establish the basis for claiming ownership to the carbon sequestered in Kyoto forests and enable the sink credit to be recognised as a right that could be separated from the trees or land and able to be sold or borrowed against.

Points of obligation or “responsible parties” for forestry emissions would have the same obligations imposed on them as would emitters in other sectors. In addition, forestry points of obligation would be required to measure, report and verify carbon sequestration in order to claim carbon credits. Procedures for measuring, monitoring and reporting carbon sequestration will be essential to ensure that the amount of carbon sequestered, and subsequently credited, is established and verified.

For Kyoto Protocol-compliant credits, the point of obligation in the forestry industry would have to account for emissions from deforestation and for reductions in the carbon stocks of Kyoto forests (eg, through harvesting). A point of obligation for Kyoto forests would be to report reductions in carbon stock over the course of the normal harvest-regeneration cycle, including any deforestation. A point of obligation for non-Kyoto forests would only be to report reductions in carbon stock from deforestation.

A number of significant issues would need to be worked through for this option:

- any work programme for developing a domestic emissions trading scheme
- determining relevant points of obligation
- monitoring, audit and enforcement
- the degree to which domestic rules mirror Kyoto Protocol accounting, or other international, rules.

4.6.8 Assessment of options

An assessment of the above options has been undertaken using the policy criteria outlined above in Section 4.6.4. This is condensed into Table 28 below.

The assessment of the options in this section can be summarised as follows.

The current policy

This option does not send strong positive signals on climate change implications of land-use change decisions. The PFSI will provide positive signals for those who opt in to grow continuous canopy forestry under the initiative. The lack of positive signals under this option means that it does not have long-term resilience and may not assist in meeting the Government's climate change goal or with new international climate change arrangements. Anecdotal evidence suggests uncertainty over the deforestation cap is contributing to land-use change prior to CP1. The Crown's fiscal liabilities arising from this option are limited to 21Mt CO₂e from the deforestation cap (for CP1) and any decreases in carbon stocks from Kyoto forests. The option is feasible in the short term because transaction costs and compliance issues will only arise for participants in the PFSI. However, the policy does have risks relating to its long-term feasibility because of the lack of clarity around the operation of the deforestation cap. Some serious equity issues arise for owners of non-Kyoto forests from the deforestation cap, if it were put in place.

Option One – Government retains all Kyoto benefits and liabilities

Sub-option 1A - No deforestation cap on non-Kyoto forests, no policies to enhance sinks (eg, PFSI)

Under this option, no positive or negative signals would be sent on the carbon value of land-use change and forestry decisions. The option, therefore, would not be effective in achieving either the Government's overall climate change goal or, possibly, a new goal. The approach provides certainty for forest owners about their liabilities (or lack thereof) because there is no cap on deforestation. However, there is no certainty about liability for the Crown and, if deforestation rates are high because of market conditions for forestry relative to other land uses, the situation might become untenable. The option would be feasible because it removes the complexity associated with implementing the deforestation cap.

Sub-option 1B - No deforestation cap on non-Kyoto forests, retain policies to enhance sinks (eg, PFSI)

This option would send some positive signals for continuous canopy forest under the PFSI. For this reason, it is an improvement on option 1A.

The remainder of the assessment is the same as for Option 1A.

Option Two – Payment for afforestation/reforestation, no devolution of liabilities and no deforestation cap

This option sends some positive signals on some land-use decisions; namely, new plantings and replanting of non-Kyoto forests. But it does not send a signal on deforestation because the liabilities remain with the Government. It does, however, remove some uncertainty for the forestry sector around the deforestation cap. This option does not reduce the level of certainty on deforestation for the Government, because it retains the liability (although provision is made for the Government to cover this from the surplus of carbon credits). While this option provides some resilience for encouraging afforestation and reforestation, it does not provide long-term resilience for deforestation, and there is no lever for Government on this issue. This option becomes more complicated than Options 1A and 1B because the Government must administer a cash payment programme for some planting activities, while managing other activities (such as deforestation) centrally.

Option Three – The current policy, operationalisation of the deforestation cap and other policies to encourage new planting

This option addresses some issues for incentivising new plantings of forests, although the effectiveness of this would depend on the level of incentive relative to other negative external factors. Clarity on how the deforestation cap would come into effect would require further work to determine which proposals are suitable and how to implement them. Bringing the cap into operation would provide some certainty but also raise some serious equity issues for forestry investment decisions that were made 30 years prior (or longer). However, any proposal that brings the cap into effect would send signals about the climate change implications of deforestation, and removes some fiscal risk for the Government.

Option Four - Deforestation charge/afforestation rebate

This option sends stronger signals on land-use decisions than Options 1A, 1B, 2 or 3 because the costs for deforestation and the benefits of afforestation/reforestation are devolved, albeit as a proxy for a carbon price. This option also sends positive signals on the co-benefits of forestry. The rebates could recognise co-benefits explicitly, although any widening of the rebates to recognise the co-benefits raises the complexity associated with multiple objectives. The degree of flexibility in land-use decision-making provided by this option depends on the level of the charge for deforestation. Similarly, the forest owner can undertake afforestation or reforestation and receive a rebate for CP1. The obligations would be clearly spelt out for CP1 and indicate that in the future, under different climate change arrangements, the charges

and rebates will be modified to suit the new situation accordingly. This option is more complicated than previous options. Further work would be required on the goal(s) or bounds of the scheme, uptake, equitability with other sectors and cost.

Option Five - Devolution of carbon benefits and liabilities

This option would send a strong market signal on the climate change impacts of afforestation, reforestation and deforestation. This option provides some certainty for the forestry sector for the period 2008 to 2012. There could also be uncertainty, however, around the market price for carbon credits. There could be uncertainty arising from liabilities for devolved credits if the international rules change (eg, if there are changes to eligible activities). This option does not send positive signals on the co-benefits of forestry, because planting will occur according to conditions related to the market for the carbon credits and other factors (such as land price).

The sink credits create an equal contingent liability if the forest is ever harvested or otherwise degraded. Should, as is probable, the price of credits rise over time, forest owners may in fact face a substantial capital loss. Devolution may place a greater burden on forestry and land-use change than on other parts of the economy, if other sectors do not face the liabilities as directly as the forestry sector. The Government would face responsibility for the defaulting owners of forests and emissions liabilities, because under the Kyoto Protocol liabilities ultimately fall to the Government (even if they had been devolved). Therefore, strong domestic law would be required to enforce any obligations. Further work is required on the feasibility of the approach. This is strongly linked to any work undertaken on an emissions trading scheme (see Section 4.2.4). A fully functioning emissions trading scheme would likely be a pre-condition for the full devolution of sink benefits and liabilities.

A snapshot of the assessment

From the assessment above, and from the contents of Table 28, decisions on which of the options are preferable or most desirable depends on the relative importance placed on the criteria.

If, for example, the criterion of “appropriate land-use signals” is considered important, then Options Three, Four and Five are preferable because they send stronger signals on the climate change implications of afforestation, reforestation and deforestation. These options, however, tend to be more complex and have issues around meshing national-level monitoring and reporting with compliance and monitoring at a forest block level. But if “feasibility” is considered to be an important criterion, Options Three, Four and Five tend to rank lower on that criterion compared with Options One and Two.

If the “reduction of uncertainty” criterion is important, Options One and Two have reduced uncertainty for the forest owner because of the removal of the deforestation cap and associated concerns about how this will be put into effect. These options result in increased uncertainty for Government because there are no bounds on the deforestation liability faced. Therefore, these options tend to rank lower on the “minimisation of Crown risk” criteria. The options that include a carbon price, such as Options Four and Five, provide increased certainty about their obligations and rules,

but increased uncertainty about the future price of carbon associated with those obligations.

If “resilience” is considered an important criterion, then Options One and Two offer resilience, but do not send any signals on deforestation (although afforestation and reforestation are addressed in Option Two). Option Five ranks low in resilience because, if rules change beyond CP1 after the benefits and liabilities have been devolved, this raises serious issues for any new arrangement. Options Three or Four can be varied to suit any arrangement after CP1, with Option Four having the rebate and charge altered to align with any climate change obligations post-CP1.

If “equity” within the forestry sector is considered important, Options One and Two rank highly because there are no liabilities for both the owners of Kyoto forests and non-Kyoto forests. Option One does not recognise the benefits of forestry, however, whereas Option Two involves a payment for this. Option Five would not be equitable across the forestry sector if the devolution of the benefits and liabilities were based on the rules in the Kyoto Protocol because non-Kyoto forests would not attract benefits.

If “sector acceptance” of the policy option is considered important, the options that remove the deforestation cap (Options One and Two) and offer payments for the benefits of forestry (again Option Two) will rank more highly. Options with a more mixed response in terms of acceptance will be those with increased liabilities for deforestation, including Options Three, Four and Five.

This snapshot highlights that none of the options is considered perfect and all have shortcomings/tradeoffs.

4.6.9 Summary and conclusions

Uncertainty about the LULUCF rules beyond 2012 is a major impediment to developing a resilient domestic policy package. Without certainty on future rules (including targets, definitions, accounting and interpretation), it is difficult to evaluate the benefits and liabilities to New Zealand in the medium-to-longer term. However, it is important to note that the design of domestic climate change policy for land-use change need not necessarily mirror international rules. While New Zealand must adhere to issues related to compliance, domestic policy design has the flexibility to determine how appropriate signals can be transmitted in relation to afforestation, reforestation and deforestation (eg, through charges and rebates).

Forestry and agriculture compete for land use. For equity and efficiency reasons, it is preferable that climate change policies are land-use sector neutral and do not distort investment decisions. Similarly, substitutes for wood products should also be treated the same. Furthermore, flexibility in land-use decision-making is desirable.

Forestry can assist New Zealand in the transition towards a more climate-friendly economy. Forest sinks “buy time”. However, any discussion on the benefits of forestry must not be divorced from the liabilities associated with harvesting and deforestation. Growing forests absorb carbon dioxide, harvesting and deforestation emit carbon dioxide.

In the short term, forest sink credits will offset harvesting and deforestation liabilities. New Zealand's projection for sinks over CP1 is a surplus of 67.8Mt CO₂e.

In the medium-to-longer term, the high planting rates of the mid-1990s mean that, at harvest, there is a potential for New Zealand's net sink position to be in deficit (ie, harvesting liabilities will be greater than the sequestration benefits). This deficit assumes that current Kyoto rules remain very similar over the medium-to-long term and that New Zealand is unable to gain a more favourable agreement (relative to the present agreement) in the future. It is noted that a sustained planting programme would serve only to dampen or push this deficit out into the future.

The long-term climate change benefits of new plantings to New Zealand include a reduction in agricultural emissions (assuming that the land planted is in agricultural production and not scrub), immediate sink credits in the event that New Zealand is able to gain a more favourable agreement (relative to the present agreement) in the future, and an ongoing stock of carbon if the land is replanted and remains in forestry.

Forests not only sequester and store carbon, but can deliver co-benefits. Options that send positive afforestation and reforestation signals could be used to maximise other co-benefits associated with forestry such as:

- reduced agricultural emissions
- improved soil conservation, catchment management and water quality, and biodiversity outcomes
- enhanced ability to produce substitute materials for more emissions-intensive products
- a potential source of bioenergy.

The lack of information and in-depth analysis precludes any recommendation in this review on a preferred policy option for climate change land-use policies. Of the range of options assessed (from Government retention of all benefits and liabilities to the devolution of all benefits and liabilities) none is clearly preferred, and all have shortcomings/tradeoffs to various degrees, as illustrated in Table 28 and outlined in the discussion in Section 4.6.7.

As assessed against the policy criteria outlined in Section 4.6.4, the current policy package does not send appropriate climate change signals to land managers regarding the benefits and costs of land-use change.

It is recommended that Option One not be progressed further because, while it would provide greater certainty for forest owners in the absence of the deforestation cap, the lack of signals and bounds on the liability for the Crown means the situation would likely become untenable.

The review highlights some possible avenues to improve the lack of climate change signals to land managers. These findings will form the basis of a work programme for further analysis. Those options include:

- Option Two - A payment for afforestation/reforestation and removal of the deforestation cap
- Option Three - The current policy package - clarification of the policy relating to the deforestation cap, additional policies to encourage new planting
- Option Four - Deforestation charge/afforestation rebate
- Option Five - Devolution of carbon benefits and liabilities (in conjunction with work on an emissions trading scheme).

A preferred option is dependent on the practical detail, which is yet to be worked through. It also depends on which of the criteria are considered to be most important.

Options Three, Four and Five offer greater certainty and improved signals but are technically complex. They raise considerations related to feasibility, compliance, enforcement and compliance costs. It is considered that a pre-condition for the full devolution of sink benefits and liabilities (Option Five) is a fully functioning emissions trading scheme (refer to Section 4.2.4).

The options should be investigated urgently to ensure that any policy changes can be implemented prior to CP1.

A work programme is also required to investigate the consistency of the above options against the World Trade Organisation and other international agreements obligations.

Better information is also required to discern the future deforestation intentions of foresters and to understand the decision-making process of land-use change in New Zealand.

RELEASED UNDER THE
OFFICIAL INFORMATION ACT

Box 2 - A Forest Sink Offset Scheme

The Australian Greenhouse Office has a functioning forest sink offset programme. Projects are approved as “Greenhouse Friendly” subject to the following eligibility criteria:

- **type of project.** The physical features of the forest must meet specified requirements. (New Zealand has defined “forest” in the context of the Marrakech Accords; the definition is wider than previously reported but includes production forests.)
- **additionality.** The project must be beyond business-as-usual. Not all forest plantings will be eligible. (For forestry, New Zealand has looked to compliance with the Kyoto Protocol rules as evidence of additionality. Nevertheless, the concept is well developed in other programmes where Government is involved with forestry, such as the East Coast Forestry Project, which distinguishes “target land”).
- **permanence.** The carbon offset must be secured on a permanent basis. (New Zealand has its own Permanent Forest Sinks Initiative. But the Australian scheme also includes *Pinus radiata*. “Permanence” means a commitment to maintain abatement for at least two rotations - 70 years in the Australian situation).

The Australian scheme also provides that existing commercial forests may be eligible:

“Existing, commercially viable forest projects may be able to generate eligible abatement where it can be sufficiently demonstrated that management decisions were or will be taken to preserve or enhance the carbon value in the forest beyond that factored into the preceding business plan.”

On the supply side, an element currently absent in New Zealand approaches is legal taxation and contractual mechanisms to support **carbon pooling**. A carbon pool is an investment vehicle that joins together the carbon purchaser; the carbon supplier; those providing management services such as verification; and potential investors or underwriters.

In the Australian experience, purchasers include both **emitters** (companies seeking to offset greenhouse gas emissions from other sources or activities to greenhouse gas regulatory requirements or to enhance their environmental performance) and **public interest purchasers** (buyers seeking social and environmental objectives, including government agencies, altruistic organisations and business actors seeking marketing or reputation benefits).

Considering the role of Government, while there is some involvement on the purchasing side of the market, the key task has been to develop the legislation to support carbon pooling, clarifying the carbon property right. The matching of supply and demand, including the setting of the carbon price, occurs entirely within the private sector.

New Zealand officials have not yet carried out a detailed investigation of the Australian programme, considering whether it can be adapted for our circumstances. Australia is not a signatory to the Kyoto Protocol and we do not know, for example, what the Kyoto Protocol interface might entail. Nevertheless, we are informed that the scheme has been very successful in terms of uptake and broad acceptability to business.

Source: Australian Greenhouse Office publications (2005 b,c and d)

Table 25 – Analysis of Alternative Forestry Policy Options

	Criteria	1A	1B	Options	2	3	4	5
		Government retains all benefits and liabilities (no PFSI)	Government retains all benefits and liabilities (retain PFSI)	Payment for afforestation/ reforestation and replanting, no devolution of liabilities and no deforestation cap	The current policy, operationalisation of the deforestation cap and other policies to encourage new planting (includes PFSI)	Deforestation charge/afforestation rebate	Devolution of carbon benefits and liabilities	
A	Appropriate land-use signals	Poor No positive or negative signals sent on climate change, although flexibility of land-use change is high.	Slightly better than 1A because signals sent by PFSI.	Medium Some signals sent by payment. Lack of deforestation cap means no signals sent on effects of deforestation.	Medium Improved – clear policy on deforestation cap and others encouraging planting (plus PFSI).	High Clear positive and negative signals sent through payment and rebate system.	High Strong and clear signals sent by accounting for carbon sequestered or released.	
B	Reduction of uncertainty	Reduced uncertainty because deforestation cap is removed.	Reduced uncertainty because deforestation cap is removed.	Reduced uncertainty because deforestation cap is removed.	Certainty provided by operationalising the deforestation cap.	Certainty for forestry sector from having clear rules and price signals for activities.	Certainty about rules and obligations for credits. Uncertainty about carbon price.	
C	Resilience	High The absence of a strong policy signal leaves future options open, but no long-term signals sent.	High The absence of a strong policy signal leaves future options open, but no long-term signals sent.	Medium Payment for plantings can be altered to suit any new situation beyond CP1. No resilience on issue of deforestation.	High Can be altered to suit new situation beyond CP1.	High Can be altered to suit situation beyond CP1.	Poor After devolution of benefits and liabilities, issues arise if forestry rules change beyond CP1.	
D	Equity	High No liabilities for owners of KFs or non-KFs - equitable. No recognition of benefits from forestry through allocation of proportion of benefits.	High No liabilities for owners of KFs or non-KFs - equitable. No recognition of benefits from forestry through allocation of proportion of benefits (aside from PFSI).	High No deforestation cap removes the equity issue for the owners of non-KFs. Depends on start date for payment.	Potential inequity arises for owners of non-KFs from operationalising the deforestation cap. Depends on start date for policies to enhance plantings.	Some land owners will pay charge for deforestation, while not receiving the payment for earlier planting. Depends on start date for charge and rebate.	Not equitable for owners of non-KFs if the Kyoto Protocol rules are followed.	
E	Sector acceptance	High – because of removal of the deforestation cap. Loss of PFSI would not impact greatly on sector acceptance.	High – because of removal of the deforestation cap.	High No deforestation cap and also receive payment for benefits of forestry.	Mixed Operationalising the cap will have negative effect, but policies on planting may improve sector acceptance.	Okay Sector buy-in would be reasonable as payment recognises some, but not all, forestry. Deforestation charge may not be acceptable to sector.	Depends on the circumstances Negative for owners of non-KFs, and positive for KF owners, if Kyoto Protocol rules followed.	

Table 25 (continued) – Analysis of alternative forestry policy options

Criteria		1A	1B	Options			5
		1A	1B	2	3	4	5
		Government retains all benefits and liabilities (no PFSI)	Government retains all benefits and liabilities (retain PFSI)	Payment for afforestation reforestation and replanting, no devolution of liabilities and no deforestation cap	The current policy, operationalisation of the deforestation cap and other policies to encourage new planting	Deforestation charge/afforestation rebate	Devolution of carbon benefits and liabilities
F	Maximising co-benefits	Poor Co-benefits not incentivised. Co-benefits lost through deforestation not addressed, in absence of cap.	Poor (better than 1A) Co-benefits not incentivised, aside from the PFSI. Co-benefits lost through deforestation not addressed, in absence of cap.	Payment may assist with co-benefits. Co-benefits lost through deforestation not addressed, in absence of cap.	Potential from co-benefits depending on how policies to enhance plantings are implemented.	Would result in some new planting and associated co-benefits – could link payments to where the co-benefits were desired.	Poor. No influence over maximising co-benefits – location of planting driven by market.
G	Minimisation of Crown risk	Uncertain Removal of deforestation cap means that the level of liability is unknown.	Uncertain Removal of deforestation cap means that the level of liability is unknown. Fiscal cost of the PFSI is minimal.	The fiscal liability from deforestation is unknown because it is not capped. Fiscal costs associated with payments are unknown (but remains within the surplus of sink credits above the level of deforestation liabilities).	Costs capped at 21Mt CO ₂ e for non-KFs and clear policy for operationalising the deforestation cap. Fiscal costs of any new policies to enhance plantings is unknown.	No deforestation cap and therefore fiscal risk depends on the response of the sector to the charge. The fiscal cost of the afforestation rebate depends on the degree of uptake. If the option is undertaken as a forestry off-set scheme (see Box 1), this latter cost is transferred to the purchasers of the sink units.	Removes 67.8Mt CO ₂ e of liability from the Crown account.
H	International obligations	Unknown – further work required on this.	Unknown – further work required on this.	Unknown – further work required on this.	Unknown – further work required on this.	Unknown – further work required on this.	Unknown – further work required on this.
I	Feasibility	High Easy to implement, with some issues relating to national-level monitoring.	High Implementation of PFSI makes option slightly more difficult than 1A.	Medium Managing some activities through payments and deforestation centrally (with no deforestation cap).	Difficult Complex arrangement of multiple programmes.	More difficult Measurement and verification for payments and rebates. Enforcement issues.	Most difficult - monitoring - enforcement - transaction costs - point-of-obligation issues.