New Zealand Climate Change Programme
Te Hōtaka Rerekētanga Āhuarangi ō Aotearoa

Forest Sinks and the Kyoto Protocol

An Information Document

New Zealand Climate Change Programme

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FOREWORD

This information document is an important step to involve the wider forestry sector in the development of New Zealand's domestic climate change policy for forest sinks.

As a signatory to the Kyoto Protocol's parent agreement, the United Nations Framework Convention on Climate Change, New Zealand is called on to conserve and enhance its sinks and reservoirs. We take this responsibility seriously. We recognise the importance sinks have in reducing greenhouse gas concentrations in the atmosphere.

The development of policies to meet our obligations under the Protocol is being conducted openly and transparently. Considerable effort is being put into consultation with interested groups. The Government recognises its obligation to explain what we are doing and why. We encourage your feedback on the best way to achieve the objective of protecting the global climate.

The challenge for the Government regarding forestry sinks is to design a system that takes advantage of sinks' commercial value while providing the necessary incentives to conserve and protect them. An interdepartmental working group has been charged with designing such a system. Over the remainder of the year, consultation on this matter will help the Government to get it right. In 2002 it is hoped that the framework of the system will be nearly complete, so that we can be in a position to ratify the Kyoto Protocol.

I encourage readers to think about how a system for managing sinks might operate, in preparation for formal consultation in the months ahead.

Hon Pete Hodgson
Convenor, Climate Change Steering Group
of Ministers

PURPOSE

The purpose of this document is to inform readers on sink issues. Sinks are any natural or man-made systems that absorb and store greenhouse gases, mainly carbon dioxide (CO_2). For the purposes of this document, a sink is a growing or expanding forest, and we are dealing with CO_2 that is absorbed and stored as carbon (about half the dry weight of wood is carbon). Sinks are of benefit because CO_2 is removed from the atmosphere, where it would otherwise contribute to global warming.

The Government has announced that it aims to ratify the Kyoto Protocol in 2002. Ratification is the formal act of consenting to or approving New Zealand's obligations and commitments under the Kyoto Protocol. Before then, a number of domestic policy actions are required to support ratification. Those commitments include managing emissions and sink activities in the period 2008 to 2012 (the first commitment period).

An important component of domestic policy will be the design of a system that enables carbon accumulated in some forest sinks, during the commitment period (2008 to 2012), to be recognised and traded ("sink credits") in international or domestic emissions trading markets. Conversely, there would be conditions on deforestation, and "debits" on harvesting trees that receive credits, where carbon in the form of CO_2 is lost to the atmosphere during the first commitment period.

A fully operational system for managing sinks is not required to ratify the Kyoto Protocol but work should be sufficiently advanced to lend credibility to the ratification process and to aid understanding of what ratification means for New Zealand.

As part of developing a domestic position on sinks, this document introduces sinks and presents a preliminary discussion of how a sinks system might operate. Opportunity for feedback on any matter raised in this document is welcomed as it will help formulate New Zealand's domestic position on sinks. Details on how to provide feedback are given at the end of this document.

A second discussion paper will be released later this year, providing more detail on how a sinks system might work, once there is more clarity from international negotiations on the Kyoto Protocol rules governing sink credits and debits.

INTRODUCTION TO CLIMATE CHANGE AND THE KYOTO PROTOCOL

What is Climate Change?

Our atmosphere contains concentrations of so called "greenhouse gases" (GHGs) such as CO_2, methane, nitrous oxide, hydrofluorocarbons, perfluorocarbons and sulphur hexafluoride. These gases act like a blanket that keeps in some of the sun's warmth, making life on earth possible. The blanket is getting "thicker" – especially from CO_2 emitted from the burning of fossil fuels like coal, petrol and gas, and other sources (such as clearing of forests for another land use). The effect of this thicker blanket of CO_2 is to trap heat closer to the Earth's surface which is expected to lead to an overall increase in temperature. In turn, this is expected to lead to changes in the Earth's climate, commonly referred to as "climate change" or "global warming."

A number of possible impacts of climate change have been identified. The main impacts are predicted to be temperature increases, sea-level rise, changes to rainfall patterns and increased frequency of extreme weather events. For further information on the effects of climate change, a Climate Change Impacts on New Zealand report will be available at www.climatechange.govt.nz

International Agreements

Two important international agreements deal with the threat of global climate change; the United Nations Framework Convention on Climate Change (the Convention) negotiated by the world's nations in 1992, and the Kyoto Protocol, a further agreement negotiated in accordance with the Convention in 1997.

The objective of the Convention is to stabilise GHG concentrations at a level that avoids dangerous human interference with the climate system. New Zealand is one of 180 countries to have signed and ratified the Convention. All developed countries that ratified the Convention agreed to non-binding targets to return GHG emissions to 1990 levels by the year 2000.

The Convention was designed so that it could be developed further by countries as new scientific knowledge came forward. In December 1997, in Kyoto, Japan, New Zealand and other countries signed a legally binding international agreement to reduce emissions of GHGs. The Kyoto Protocol was in response to new scientific evidence suggesting the original emission reduction targets under the Convention would not be sufficient to achieve its objective and that tougher legally binding targets were required. The Kyoto Protocol:

- sets legally binding GHG emissions targets for New Zealand based on its 1990 GHG emissions. New Zealand's target is to return emissions to 1990 levels, or "take responsibility" for any emissions above that level if it can't;
- requires "demonstrable progress" towards meeting its commitments by 2005;
- only comes into force when 55 countries, representing 55 percent of total developed country CO_2 emissions in 1990, have ratified and signed the Kyoto Protocol; and
- provides flexible means for countries to take responsibility for their emissions (including use of sinks and international emissions trading).

The Protocol has yet to be ratified by any nation which has legal obligations under it and is considered by New Zealand to be not yet ratifiable. International negotiations are proceeding, notably at meetings in July and November of this year, though they remain clouded by uncertainty over the position of the United States.

New Zealand and the Kyoto Protocol

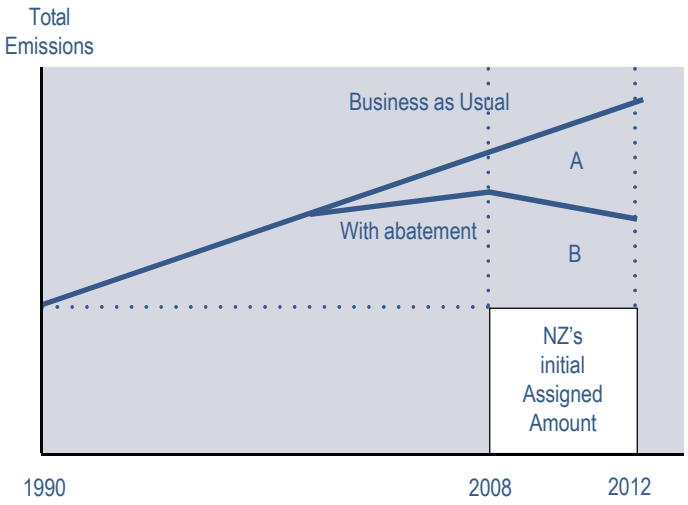
The Government aims to ratify the Kyoto Protocol in 2002 and has said that it wants New Zealand to be, and to be seen to be, an environmentally responsible world citizen. In New Zealand, the Government's intention is to have the means to implement our commitments in place, such as appropriate legislation, prior to ratification.

The key climate change issue facing this country is our significant increase in CO_2 emissions since 1990 (about 20 percent by 2000 and projected to be 40 percent by 2010). If New Zealanders continue with "business as usual", our greenhouse gas emissions will continue to grow and will be more costly and difficult to deal with by the time

our emissions would be subject to our Kyoto Protocol target in the period 2008-2012. According to forecasts, and assuming business as usual i.e. no additional measures being taken to reduce emissions, New Zealand's emissions will exceed its Kyoto Protocol allowance of GHG emissions or "initial Assigned Amount" in the commitment period (its 1990 emissions level) by about 50 million tonnes of CO_2.

Diagram 1 shows New Zealand's GHG emissions allowance for the period 2008-2012 (represented by the area "New Zealand's Initial Assigned Amount"). This box represents around 363 million tonnes of CO_2 equivalent. A projected business as usual line tracks above New Zealand's emissions allowance for the first commitment period. This shows that New Zealand, without a response that encourages reductions in emissions, would emit GHG's in excess of its commitment (areas A + B). With a robust programme, cost effective reductions in emissions would occur, represented by area A. However, this still leaves area B for which New Zealand must take responsibility. This diagram does not include sinks.

Diagram 1
New Zealand's Emissions Obligation



The Protocol does not necessarily require New Zealand to reduce its emissions to 1990 levels. New Zealand also has the option of purchasing emission units on international markets to offset any excess. Reducing emissions and purchasing further emissions units both involve a cost, but by being able to choose which of these options to take, New Zealand can lower the cost of complying with the Kyoto Protocol. Emission units purchased by New Zealand represent a GHG emission that would have otherwise occurred in other countries, or verified increases of the carbon accumulated in qualifying forest sinks, so that the global amount of net emissions remains unchanged because of offsetting removals of CO_2 from the atmosphere.

One option for countries to meet their commitments is through "sink credits". The Kyoto Protocol provides a basic framework for the inclusion of carbon sinks in meeting emissions commitments. While emissions increase the atmospheric concentrations of GHGs such as CO_2, sinks have the opposite effect by absorbing CO_2. Verified carbon sequestration (absorption) from sinks can therefore be used to offset emissions. As will be discussed later, international rules around the details of how sinks are to be included in the Kyoto Protocol are yet to be finalised. However, work can still proceed on how a sinks trading system might operate domestically.

The Government Process and Timeline

Climate change policy is the responsibility of a group of Ministers convened by the Minister of Energy, and Minister of Forestry, Hon Pete Hodgson. Policy advice is provided through government departments and agencies by officials' working groups.

The Government aims to make decisions in principle on details of New Zealand's domestic policy response to climate change later this year. This information document on sinks is part of the process of engaging the forest sector and other interested parties on forestry sink issues. A second, more comprehensive discussion document, detailing "in principle" policy decisions on sinks, is envisaged for later in the year. The Government has already made a number of preliminary decisions relating to sinks - these are set out later in this document.

The Government is also planning to release a public discussion document on Emissions Trading later this year.

FORESTRY SINKS AND THE KYOTO PROTOCOL

What is a Sink?

Sinks are any natural or man-made systems that absorb and store GHGs, primarily CO_2 from the atmosphere. To be considered a sink, a system must be absorbing more CO_2 than it is releasing so that the store of CO_2 must be expanding.

Forestry activity can influence the amount of GHGs in the atmosphere because forests can act as both a sink (absorbing emissions) and as a source of emissions when trees are felled. When a tree or forest is increasing in size, it absorbs CO_2 or carbon as part of the process of increasing its biomass - a growing forest is a sink. Once the forest reaches maturity its carbon density remains approximately constant as decay is releasing about the same volume of CO_2 as the forest is absorbing - this is called a carbon "reservoir." Finally, when a forest is cleared or harvested (or subject to a major disturbance such as fire) without replanting, much of the stored carbon is converted back to CO_2 again and the forest is a "source" of CO_2. Under Kyoto Protocol accounting, clearance of a forest without replanting is treated as for any other sources – it is assumed that the carbon in the removed forest is converted to CO_2 emissions. This only applies to deforestation (i.e. harvesting without replanting or other types of forest regeneration).

New Zealand's Forest Sinks

This section describes New Zealand's forest sinks under the Kyoto Protocol. The international negotiations on sink activities have largely focused on production forests, such as New Zealand's plantation forests. Only Japan has sought to include conservation forests as eligible sinks. This position has found little international support.

New Zealand's plantation forests planted since 1990 have significantly increased in area and the role these forests play in removing CO_2 is an important component of New Zealand's climate change policy. During the Kyoto Protocol's first commitment period, 2008-2012, New Zealand "Kyoto forests" are expected to remove approximately 100 million tonnes of CO_2 equivalent. By comparison, New Zealand's initial assigned amount for the first commitment period is 363 million tonnes of CO_2 equivalent.

The average new planting rate over the last 30 years has been 43,500 hectares per year. Over the period 1992 to 2000 new planting rates have been high. Over this eight year period 520,000 hectares of forest have been established, giving an average planting rate of 65,000 hectares per year. New entrants to forestry have carried out much of this new planting. Accurate details of the ownership composition of these new entrants is not available. Anecdotal evidence suggests that the majority of these new owners are either private land owners or syndicate investors and that most of the forests established by these owners are small in size. While these new owners have planted a significant area during the 1990s, 72 percent (1.3 million hectares of total pre and post 1990 forest) of the entire forest resource is still currently owned by growers with more than one thousand hectares of forest.

Indigenous forests cover approximately 6.2 million hectares. Scrublands cover an additional 2.7 million hectares. The combined area of indigenous forest and scrub covers more than five times the area that is under plantation forest, and contains a significant stock of carbon locked up in trees, understorey, forest floor and soil. New Zealand has sought in negotiations to include sinks from the abandonment of marginal pastures, which are reverting to scrub and which, if allowed, may eventually develop into high forest. Whether this will be allowed depends on future international negotiation.

How are Sinks Treated?

The Kyoto Protocol does not include all sinks on a comprehensive basis. Only a limited subset have been agreed upon.

The main reason for only including a subset of forest sinks, for the first commitment period, was that countries' targets were set for all sources of human-caused GHG emissions except CO_2 from the land use, land use change and forestry sector.[1] Allowing credit in the commitment period for all sinks in countries that have taken on targets would have weakened the effect of these targets by

[1] Except for Australia who, under Article 3.7 included emissions from land clearing in their 1990 base year.

around 10 percent. In the negotiations, this was referred to as "the gross-net emissions loophole". Some limitation was therefore necessary to maintain the environmental objective of the Protocol. The limitation agreed upon in Kyoto was that only new "since 1990" forests would qualify in the sinks accounting system and if additional sink activities beyond this were to be subsequently included, these too should represent activities "since 1990".

Both at Kyoto and since, countries have noted the possibility of a fuller inclusion of sinks in the second commitment period, when targets can be set that are consistent with fuller carbon accounting.

But in the meantime, for the first commitment period, the relevant parts of the Kyoto Protocol for sinks are Articles 3.3 (forest sinks) and 3.4 (additional sink activities).

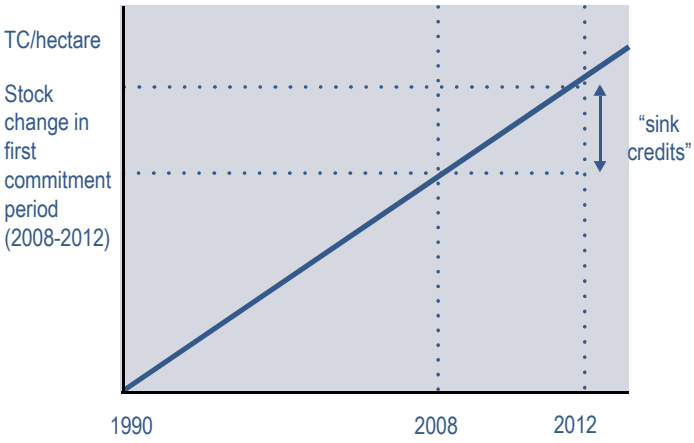
Article 3.3 – Forest Sinks

Under Article 3.3, countries with targets can gain additional Assigned Amount (sink credits) for the CO_2 absorbed during 2008-2012 (the first commitment period) by forests established by "afforestation or reforestation" since 1990. This will be measured by the increase in carbon stock in these forests during this five year period. Countries will also have to give up Assigned Amount for any loss of carbon stock during this period from land subject to "deforestation since 1990". To be in compliance with the Protocol at the end of the commitment period, countries need to have sufficient assigned amount to cover their GHG emissions from the sources covered by their targets.

Under the emissions trading provisions of the Protocol, sink credits from Article 3.3 are fully tradable like any other form of Assigned Amount.

The situation for New Zealand for Article 3.3 activities is described in Diagram 2.

Diagram 2
Increases in Carbon Stock - "Sink Credits"



The left axis of Diagram 2 represents accumulated carbon or changes in carbon stock. The diagram shows that over time a growing forest or stand has accumulated carbon. The arrow represents verified increases in carbon stock – eligible for sink credits. If the diagram were to represent New Zealand's likely total Kyoto forests, the arrow would represent approximately 100 million tonnes of CO_2 equivalent.

Conversely, New Zealand must account for decreases in carbon stock over 2008-2012 from deforestation (conversion of forest land to another use) that has occurred since 1990. Consideration needs to be given to how to account for deforestation between 1990 and 2008.

So what forest sinks are counted? A "qualifying"' or "Kyoto" forest sink must meet four tests:

- it must be considered a "forest" (see the glossary at the end of this document for definitions related to Article 3.3);
- its establishment must have been "direct human-induced" e.g. through planting, seeding or possibly, if New Zealand's position is adopted, through *human induced promotion of natural regeneration*;
- it must have been established after 1 January 1990; and
- the forest must have been established on land that was previously in some other land-use and did not contain forest on 1 January 1990.

For example, a pine plantation that was planted after 1 January 1990, on land that was previously

in pasture, is an eligible "Kyoto forest" sink. This Kyoto forest would receive credits and incur obligations for changes in carbon caused by the plantation (harvest/regeneration) cycle. Credits would accrue for carbon absorbed, but only in relation to carbon absorbed during the commitment period (2008-2012). Obligations would be incurred for the loss of carbon during harvesting (regardless of whether the land is deforested or replanted). Replanting after harvesting would not remove these obligations but they would create a new inflow of credits as the new plantings grew.

A forest that existed prior to 1 January 1990 and was subsequently harvested and replanted does not qualify as a Kyoto forest. Under this circumstance, no credits would accrue for carbon absorption and no obligations would be incurred. If the forest were removed (i.e. not replanted) and replaced with another land use (e.g. lifestyle blocks) then the forest owner would incur obligations created by the permanent loss of carbon that was originally stored in the forest.[2]

The key issue is that there must have been a "land-use change" since 1990. So, only land that was not in forest on 1 January 1990 can be claimed as a Kyoto forest. Eligible Kyoto forest land would be accounted for continuously over any future commitment periods i.e. once counted, carbon stock changes on that land (both positive and negative) are always accounted for. This means there will be an obligation at the time of harvest.

Reverting high scrub on agricultural land could be considered for sink credits if it meets the tests above. This will depend in part on the agreed definition of a "forest."

All forests are included as far as deforestation is concerned, i.e. forests established pre and post 1990, but deforestation has a very specific meaning. It refers to a forest that is cleared and converted into a non-forestry land use.

Article 3.4 – Additional Sink Activities

This Article provides a process for the negotiation of additional sink activities that may apply in the first commitment period but are more likely to be included in the second and subsequent commitment periods.

Under Article 3.4, countries with targets can gain additional Assigned Amount (sink credits) for the CO_2 absorbed by "additional sinks activities." For the first commitment period this is only true for sink activities that have occurred since 1990. However, what "additional activities" are to be counted was left open in Kyoto to ongoing negotiation.

Possible additional activities that may be agreed under Article 3.4 include:

- forest management (of non-Kyoto forests);
- grazing land management;
- cropland management; and
- revegetation.

As with Article 3.3, there are a number of definitional and operational issues that need to be resolved under Article 3.4.

Article 3.4 provides opportunity for credits derived from **changes** in management practices since 1990. In other words, credits could be given for changes in management practices on lands where carbon absorption was verified to be over and above what would otherwise have occurred, but only carbon absorbed during the commitment period would qualify for credit.

In international negotiations some countries have sought a discount or maximum cap on credits that could be earned under Article 3.4 if it were applied in the first commitment period.

Sinks and Emissions Trading – Their Role in Meeting Countries' Emissions Obligations Targets

The Kyoto Protocol provides a basic framework for the inclusion of carbon sinks in meeting countries' emissions commitments. The Protocol provides for developed countries to use international emissions trading[3] to assist in meeting their emission targets. Sinks could be incorporated into an emissions trading system by issuing a 'sink credit' for each tonne of CO_2 sequestered (absorbed) in qualifying sinks during the commitment period. Sink credits would be interchangeable with emissions units and could be purchased by industries and countries needing to account for any "excess" emissions over their Kyoto target.

[2] This will depend on international negotiations and domestic decisions concerning Article 3.4 of the Kyoto Protocol (see page 11).
[3] See the Glossary for a definition of international emissions trading.

A country's responsibility for meeting emissions targets could be devolved to its individual firms or sectors. So for example, a factory required to account for emissions above its target could either reduce emissions or purchase sink credits or emissions units. If sink credits are purchased the effect on the atmosphere is neutral – a unit of CO_2 is released into the atmosphere and an equivalent unit has been absorbed. The factory takes account of its emissions either way and can choose the least cost approach to meet its target. If the factory chooses to purchase sink credits, the 'sink owner' receives the monetary benefit for the atmospheric benefits their trees provide.

Recent Government Decisions on Sinks

The Government has already taken a number of preliminary decisions on domestic sinks policy. These decisions provide strategic guidance but do not provide the detail of how an operational sink credit trading system would function.

In July 2000, Cabinet agreed in principle that all or most of the 'sink credits' derived from sink activities would be tradable within an international emissions trading system under the Kyoto Protocol. They also agreed that some proportion of the benefits from those sink credits would go to those undertaking the sink activities.

The Government's intention is that domestic emitters face the cost of their emissions reduction responsibility and should not be shielded from price signals by domestically generated sink credits. In other words, domestic emitters wishing to purchase domestic sink credits for their emission activities would have to pay the international market price for them. Correspondingly, sink credit sellers can expect to get the international price.

In January 2001 Cabinet confirmed that some proportion of the benefit from sink credits would accrue to those undertaking the sink activities. Cabinet noted that it is yet to finally determine its position on what this proportion should be, but that it considered that any decision should take into account the following goal:

"To maximise the net economic benefit to New Zealand whilst protecting and enhancing sinks and reservoirs consistent with our international obligations under the Kyoto Protocol and the United Nations Framework Convention on Climate Change".

Cabinet also agreed to a number of principles by which to determine the proportion of benefit that should go to those undertaking sink activities. These principles are:

Environmental Integrity

- Provide incentives to protect and enhance sinks.

Economic

- Promote strong market incentives for efficient use of capital flowing from efficient price signals.
- Minimise economic distortions and any adverse effects on international competitiveness and investment.

Participation

- Provide incentives for land and forest owners to participate in a sink accreditation scheme, by conferring additional Assigned Amount Units (sink credits) from sink activities in exchange for fulfilment of obligations.
- Ensure that allocation decisions provide certainty and confidence for business and are open, transparent and consultative.
- Ensure allocation is conducted in a fair manner having regard to private investment made in the creation of Kyoto forests (forests established after 1990 that generate additional AAUs (sink credits)).

Government

- Minimise the risk of legal liability to the Crown.
- Ensure that arrangements are consistent with the Treaty of Waitangi.
- Ensure taxation treatment is consistent with that of other assets.
- Ensure the wider public interest is balanced with private interests.

A POSSIBLE FRAMEWORK FOR TRADING SINK CREDITS

The section below describes a possible framework for how a sink credit trading system might operate.

The presentation of this system is intended to promote discussion amongst foresters. A further discussion document containing details of this system will be developed later in the year as part of the formal consultation exercise on sinks. In due course, elements of this conceptual framework for sinks will be included in the Government's Climate Protection Bill, which will form the platform for formal ratification of the Kyoto Protocol. Much of this work will be dependent on the successful negotiation of the rules for sinks under the Kyoto Protocol at the resumed session of the Conference of the Parties to the United Nations Framework Convention on Climate Change in July 2001.

At its simplest, a sink credit trading framework could enable changes in carbon stocks in Kyoto forest sinks over commitment periods to be measured, reported, verified and issued to "responsible parties".

Sink credits could be issued for increases in carbon stocks, or surrendered and cancelled for decreases in carbon stocks. Once issued, sink credits could be traded on an emissions trading market.

Points to consider include:

- defining and issuing the sink credit;
- obligations for responsible parties;
- the sink credit and emissions trading interface;
- measuring, monitoring, reporting and claiming Sink Credits;
- enforcement and compliance; and
- taxation.

Defining and Issuing the "Sink Credit"

A sink credit could be created by statute. This could 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. Preliminary legal analysis by the Government suggests that there is presently no provision in New Zealand law that would define the legal ownership of carbon credits.

Those undertaking sink activities (responsible parties) could be issued sink credits in proportion to each unit of CO_2 sequestered in a Kyoto forest. Eligible or qualifying sinks and sink activities are limited to afforestation, reforestation and deforestation under Article 3.3 of the Kyoto Protocol.

Conversely, the responsible party would be a "point of obligation" for emissions associated with reductions in carbon stocks and deforestation (see below). Sink credits could be surrendered or cancelled, or emissions units purchased to cover emissions.

When would responsible parties receive sink credits and incur obligations i.e. debits? This could occur annually or at the end of a longer period e.g. the commitment period.

Obligations for Responsible Parties

Decreases in carbon stock in sinks would be treated similarly to points of obligation in the domestic emissions trading system. This would apply to all harvesting of Kyoto forests included in the accounting system and to deforestation of non-Kyoto forests.

A point of obligation could be placed with responsible parties, e.g. forest owners. A point of obligation would require a responsible party to monitor and report emissions during the commitment period and, at the end of each reporting period, to hold a quantity of 'emission units' or to have surrendered sufficient sink credits, greater than or equal to their emissions.

Sink Credit and Emissions Trading Interface

Emissions units and sink credits would be interchangeable, having the same unit of measurement (e.g. 1 tonne of CO_2 equivalent), and being freely transferable amongst trading participants. The Government has agreed "in principle" that all or most sink credits will be tradable within an international emissions trading system under the Kyoto Protocol. New Zealand's domestic emissions trading system would be linked to an international emissions trading system, so that sink credits could be bought and sold domestically and internationally in the same way as emissions units.

An emission unit could enable a point of obligation in a domestic trading regime to emit a specified

amount of CO_2. A sink credit would also enable a point of obligation to emit a specified quantity of CO_2, as it would be issued in acknowledgement that the same quantity of CO_2 had been sequestered. Emissions units and sink credits could therefore be able to be surrendered by emitters to the Government or a body responsible for authorising emissions.

Measuring, Monitoring, Reporting and Claiming Sink Credits

Procedures for measuring, monitoring and reporting carbon sequestration will be essential to ensure that the amount of carbon sequestered, and subsequently credited, was established and verified. This would establish and maintain the credibility of sink credits as equivalent to genuine emissions reductions, giving the market necessary confidence in the trading system.

Costs could be borne by sink owners in meeting measuring, monitoring and reporting requirements, as well as in the process of selling sink credits through an emissions trading system. The entire sink system must ensure that administration and transaction costs are minimised so as not to make the value of sink credits uneconomic.

To encourage participation it would be necessary, in the design and implementation of the sinks system, to find the most cost effective approach for measuring, monitoring, verifying and reporting carbon sequestration that meets international requirements and international good practice.

Responsible parties could claim sink credits through verified demonstration of the carbon absorbed by their sinks.

This could be handled in several different ways, including:

- arranging for contestable third party verification and reporting of sequestered carbon by registered verifiers to the Government/ Government agent; or
- measuring sequestered carbon on a regular basis using either accepted standards or rules established in regulation and self reporting to the Government/Government agent; or
- periodic measurement and reporting by a Government agent.

Enforcement and Compliance

An enforcement/compliance regime would guard against over claiming of sink credits or under-reporting of deforestation or reductions in carbon stock. A regulator could supplement reporting with regular field audits. Penalties would be imposed for non-compliance with the system.

Taxation

The taxation implications for the allocation and trading of sink credits will need to be considered in due course.

Scenarios for Foresters under a Ratified Kyoto Protocol

Listed below are two possible scenarios facing foresters under the Kyoto Protocol. It is important to stress here that responsible parties may potentially be eligible to gain the value of carbon accumulated in trees during the commitment period, but decreases in carbon stock in Kyoto forests and deforestation will incur a cost. For those foresters who do not have Kyoto forests, this could mean costs without the benefit of sink credits if there is a land-use change from forestry to some other land use.

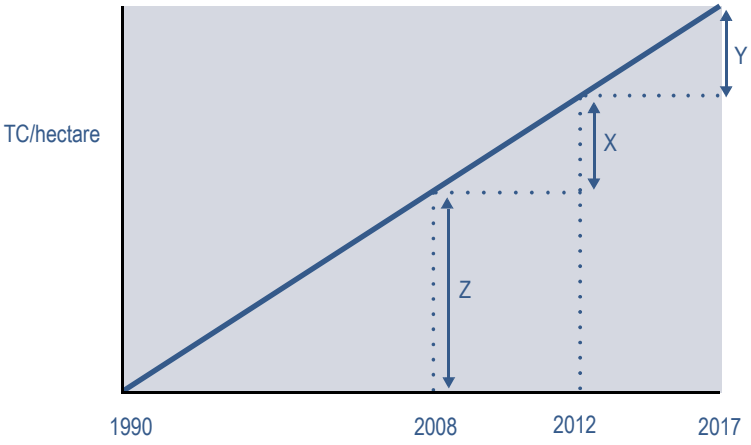
Scenario 1

Mr Pine plants a 10 hectare woodlot on his farm in the winter of 1990. The woodlot is planted onto existing pasture – it is a "Kyoto forest". In the year 2008, the forest will have accumulated carbon in its total biomass, which will have increased over the period to 2012. He will therefore be eligible for sink credits proportional to the carbon stock increase between 2008 and 2012 (represented by arrow X in Diagram 3).

Assuming future commitment periods beyond 2012, Mr Pine will have to account for changes in carbon stocks, both positive and negative in this forest. Suppose he decides to fell the trees at age 27 years old (i.e. at the end of the 2013-2017 commitment period) and replant. Because his operation is part of the normal harvest regeneration cycle there is no deforestation. However, there will be a need to take account of the carbon stock

change associated with the forest harvest. This means he would receive credits proportional to X tonnes of carbon for the first commitment period and Y tonnes of carbon for the second period, but be possibly obligated to account for carbon stock losses proportional to X+Y+Z tonnes at harvest. To address this problem, New Zealand has advanced the position in the international negotiations that the debits upon harvesting a Kyoto forest should never be greater than the credits previously earned. We are optimistic that this approach will be accepted.

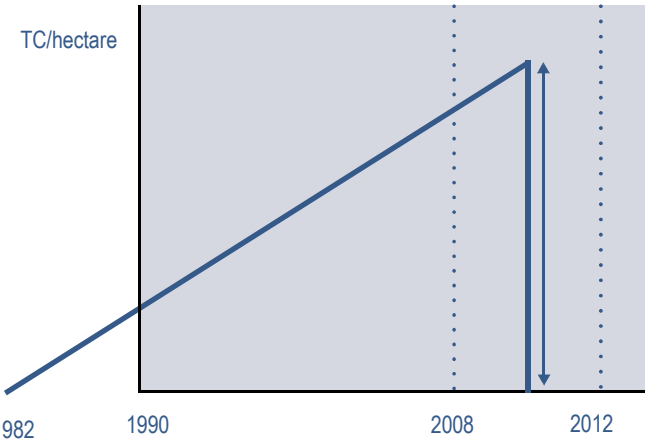
Diagram 3
Scenario 1: Mr Pine



Scenario 2

Mr Douglas wants to clearfell his mature forest (planted in 1982) and convert to pasture in the year 2010 (in the middle of the first commitment period). Comparing the carbon content of his property on 1 January 2008 and on 31 December 2012, he would be responsible for a loss of carbon. Mr Douglas's deforestation is considered to be equivalent to emissions of carbon from combustion of fossil fuels. Under this scenario, and the same for a Kyoto forest, a land use change that deforests will result in an overall cost. The cost to Mr Douglas would necessitate him purchasing sufficient emission units to take account of the reduction of carbon on his property (the arrow in diagram 4).

Diagram 4
Scenario 2: Mr Douglas



GUIDE FOR FEEDBACK

Consultation Process

The Government's formal consultation process on sinks will commence in the latter half of the year when a policy discussion document will be released on this topic. However, your response to this information document will help in the preparation of material for that future consultation.

Feedback Process

Feedback on this document should be sent to the Ministry of Agriculture and Forestry by 10 August 2001. They can be sent by mail to:

Roger Lincoln,
International Policy,
Ministry of Agriculture and Forestry,
PO Box 2526,
Wellington, New Zealand

or by E-mail to: lincolnr@maf.govt.nz

Feedback Content

Submitters should provide their name, address and contact details. When feedback is made on behalf of a group, please provide a brief description of the group and how climate change policy is of particular relevance or interest to the group.

If feedback is longer than seven pages, a summary of key points would be appreciated.

If supplying information in your submission that you consider to be confidential, please mark this clearly. It will be treated as such.

When making statements of matters of fact that may not be known by officials, where possible, please provide references or supporting analysis.

Submitters are free to provide their views. However, to assist the process by which feedback is to be summarised and 'digested' by officials it will be helpful if the focus of submissions is on the issues that are explicitly raised in the information document.

GLOSSARY OF CLIMATE CHANGE TERMS

The Glossary of terms below contains explanations of common climate change language used in this document.

The definitions below for Article 3.3 are the current state of play of multi-country international negotiations. They are likely to be subject to further changes.

Definitions yet to be Agreed for Article 3.3 Forestry Sinks

Term	Indicative Consensus Definition
Forest The definition of a forest must give each country flexibility to take into account differing national circumstances. In this sense the definition here gives scope for countries to choose three variables, tree height, tree crown cover and forest area.	"Forest" is land with a minimum area of (range to be determined) hectares with tree crown cover (or equivalent stocking level) of more than (range to be determined) per cent with trees with the potential to reach a minimum height of 2-5 meters at maturity in situ. A forest may consist either of closed forest formations where trees of various storeys and undergrowth cover a high proportion of the ground; or open forest formations over an area of (range to be determined) hectares with a continuous vegetation cover in which tree crown cover exceeds (range to be determined) per cent. Young natural stands and all plantations which have yet to reach a crown density of (range to be determined) per cent or tree height of (range to be determined) meters are included under forest."
Afforestation and Reforestation There is general consensus that the terms afforestation and reforestation represent the conversion of land from non-forest to forest. In both definitions here New Zealand has argued that promotion of natural regeneration is also a legitimate direct human-induced action. This would enable reverting scrub on marginal pasture to be claimed, provided it met the definition of forest.	"Afforestation" is the direct human-induced conversion of land that has not been forested to forest land through planting or seeding. "Reforestation" is the direct human-induced conversion of non-forest land to forest land through planting or seeding, on land that was forested, but has been converted to non-forest land. **For the first commitment period reforestation activities will be limited to reforestation occurring on those lands that did not contain forest on 1 January 1990.**
Deforestation	"Deforestation" is the direct human-induced conversion of forest land to non-forest land.
Annex 1 Parties	Refers to industrialised countries that, under the Kyoto Protocol, would take on GHG emission reduction targets, over the period 2008-2012.

Other Terms

Assigned Amount	Binding emission reductions targets agreed upon by Annex 1 countries in the Kyoto Protocol that are based on 1990 baseline emissions can be calculated as a quantity of allowed emissions, or initial assigned amount. More broadly, "Assigned Amount" includes this initial assigned amount plus additional assigned amount from sinks (sink credits) plus emission credit units from projects in developed or developing countries. All forms of Assigned Amount will be tradable.

Term	Indicative Consensus Definition
Carbon sequestration/absorption	Generally refers to capturing carbon – in a sink, so as to keep carbon out of the atmosphere.
Commitment period	A range of years within which parties to the Kyoto Protocol are required to meet their GHG emissions reduction target, which is averaged over the years of the commitment period. The first commitment period will be 2008-2012.
Emissions	GHGs released into the atmosphere.
Emissions trading	**Domestic Emissions Trading** - "Emissions trading" refers to a regulatory regime in which specified businesses and other organisations would have obligations to report their emissions and to hold or purchase a corresponding number of emission units. The units would be tradable, and those with obligations could decide how much to reduce emissions and how many units to purchase. Responsible parties who deforest land, or who harvest "Kyoto" forests, would also have obligations to acquire the necessary number of emission units (or sink credits) for the carbon released. **International Emissions Trading** - Transfer of assigned amount between Annex 1 Parties, either between governments or between persons within these countries that have been authorised to trade.
Emission unit	A legal allowance that authorises a point of obligation to emit a unit of greenhouse gas emissions. The unit is likely to be denominated as 1 tonne of CO_2 equivalent, and could be "banked" for use in future commitment periods.
Greenhouse gases (GHGs)	Includes a basket of six gases including, carbon dioxide, methane and chlorofluorocarbons whose properties relate to the transmission or reflection of different types of radiation. The increase in such gases in the atmosphere, which contributes to global warming, is a result of the use of fossil fuels, the emission of pollutants into the atmosphere and deforestation.
Kyoto forest	A forest planted since 1 January 1990 on land that was previously non-forest.
Point of obligation (in a domestic emissions trading system)	A point of obligation is a person or organisation (such as a business) that has a legal responsibility to monitor and report emissions and, at the end of each reporting period, to hold and surrender a quantity of 'emission units' or sink credits, equal to their emissions.
Sink	Sinks are any natural or man-made systems that absorb and store GHGs, including CO_2 from the atmosphere. To be considered a sink, a system must be absorbing more CO_2 than it is releasing so that the store of carbon must be expanding.
Sink credit	A unit "certificate" representing a specified amount of GHG absorbed in a "Kyoto forest" over a specified time period. Sink credits would be equivalent to emission units and could be used to meet emission obligations under the emissions trading system. A sink credit would likely represent 1 tonne of CO2 absorbed after 1 Jan 2008.