



**NEW ZEALAND INSTITUTE FOR THE STUDY
OF COMPETITION AND REGULATION INC.**

Climate Change and Forestry

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Overview

- Background and definitions
- Setting up the KP actors and measurement issues
- New Zealand's policy path and estimated net Kyoto position
- Issues for non-Kyoto and Kyoto foresters
- Current forestry (and agriculture) policy options
- Maori/Treaty settlement issues
- Some further complications, and conclusions



Government, forest owners at loggerhead

FOREST owners have walked out of talks away from the industry. But New Zealand Under the Kyoto protocol, New Zealand station. To maintain forest cover the Under current policy the Gov will see the credits. Mr Dow said

All forestry options open, says Anderton

Kyoto error fuels tax rise fear

Forestry warning on climate policy

Kiwi's rise hits timber exports

JAMES WEIR
THE Kiwi dollar is up to a seven-month
ber market because it took a range of products. Timber is one of the top products in New Zealand's \$7
New Zealand exports were also facing greater competition from higher timber production in Aus-

Plantings 'answer to Kyoto deficit'

Kyoto targets: we've given up

Big bill for missing climate change goals

NZ to buy carbon credits

MICHELLE QUIRKE
THE Government will have to buy international carbon credits to meet its climate change commitments, Treasury says.
Principal adviser Steve Rylands told a parliamentary select committee that New Zealand was unlikely to reach its Kyoto protocol emission reduction target on its own. "Some [carbon credit] buying will be inevitable if the Government wants to meet our obligations in a cost effective way."
Ministries involved in climate change work will report next month to Cabinet on how New Zealand can meet the target.

It follows the Government's decision last year to scrap the carbon tax, a key plank in policy to reduce emissions.
Officials do not yet know how many credits we would need but if we used them to cover half our expected shortfall in the first phase of the agreement, it could cost \$300 to \$700 million over the next six years.
Countries pay for carbon credits earned through emission reductions elsewhere because it is cheaper than achieving it at home.
New Zealand produced 0.2 per cent of the world's greenhouse gas output but our emissions continued to rise, Environment Ministry said.

FEELING THE HEAT B5



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Branson tags \$4.6b to combat warming

■ NEW YORK

BRITISH billionaire Sir Richard Branson has committed to spending all the profits from his airline and rail businesses — an estimated \$3 billion (NZ\$4.6 billion) during the next 10 years — on combating global warming.

The Virgin Group chairman, whose company also includes music and mobile phone ventures, has already created Virgin Fuels, which will invest \$400 million over three years in renewable energy initiatives as part of his pledge.

But profits from the Virgin Group's transport businesses, which make up nearly half the company, will also be spent on separate investments in biofuel research, development, production and distribution, and projects to tackle emissions through a planned Environmental Trust.

"We have to wean ourselves off our dependence on coal and fossil fuels," he said. "Our generation has the knowledge, it has the financial resources and, as importantly, it has the will power to do so."

Sir Richard, 56, who is known as much for his daredevil stunts as his business acumen, unveiled his plan at a news conference at the Clinton Global Initiative summit on Monday.



Warm relations: Sir Richard Branson confers with former US vice-president Al Gore and former president Bill Clinton at a news conference in New York yesterday.

Picture: REUTERS

Source: Dominion Post



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Background – UNFCCC, KP

- In 1993 New Zealand ratified the United Nations Framework Convention on Climate Change (UNFCCC)
- The Kyoto Protocol (KP) was negotiated in 1997 to commit certain (Annex I) UNFCCC parties – including New Zealand – to limit or reduce greenhouse gas emissions
- These commitments first apply over 2008 – 2012 (CP1, or the first commitment period)
- China and India are not bound under the KP, and major New Zealand trading partners like the US and Australia have not ratified it (although they are starting to come aboard)



Background – Carbon sinks

- UNFCCC defines a “sink” as any “process, activity or mechanism which removes a greenhouse gas ... from the atmosphere”
- New Zealand can meet its KP commitments using sinks resulting from “direct human-induced land-use change and forestry activities” since 1990:
 - Afforestation
 - Reforestation
 - Net of deforestation
- All KP benefits, liabilities and obligations initially fall to the Crown



Background – Definitions

- Afforestation = human-induced planting of forest on land that has not been forested for at least 50 years
- Reforestation = human-induced planting of forest on land that was previously forested but not forested as at 31 December 1989
- Deforestation = human-induced conversion of forested land to non-forested land
- **Note:** replanting or natural regeneration on previously forested land is not “deforestation”



Background – Forest types

- Kyoto forests – first planted after 1989:
 - Earn “sink (or carbon) credits” as they grow in CP1
 - Create an emissions liability if felled in CP1
- Non-Kyoto forests – planted before 1990:
 - Currently do not earn carbon credits in CP1
 - Currently create an emissions liability if felled in CP1
(unless forest is replanted or allowed to naturally regenerate)
- Sink credits can be used to offset emissions liabilities, and should be tradable at the prevailing “market price of carbon”
- Government must align foresters’ incentives with its own if it wishes to encourage Kyoto forest plantings and discourage Non-Kyoto deforestation, thereby managing its own Kyoto exposure



Forest rules

New Zealand's commitments as they stand ...

	Sink Credits?	Harvest Liability?	Deforest'n Liability?
Kyoto Forests	Yes	Yes (capped)	Yes
Non-Kyoto Forests	No	No (if replant or regenerate)	Yes

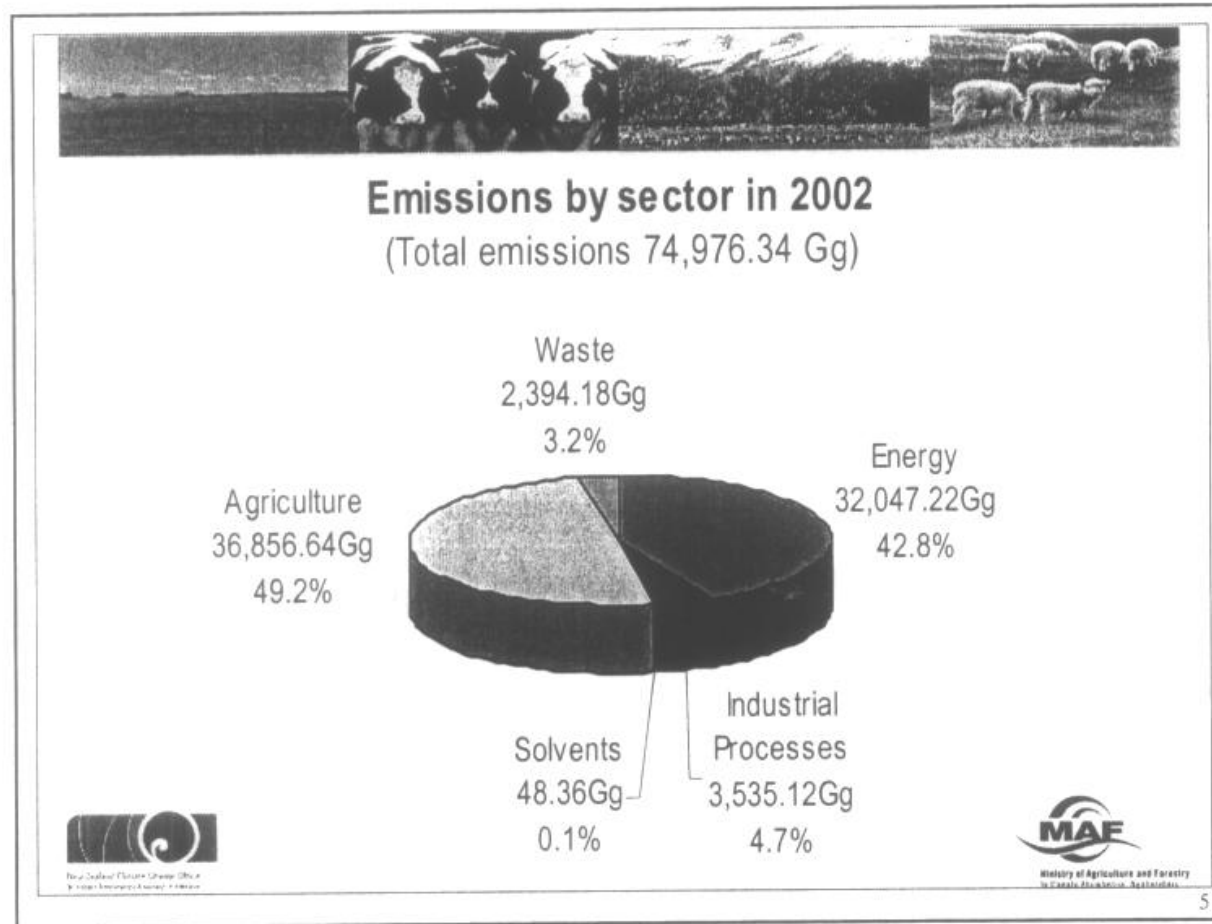


Incidence

- Importantly, no sink credits or emissions liabilities arise prior to CP1 (i.e. before 1 January 2008)
- The climate change rules to apply to forestry beyond CP1 (i.e. after 31 December 2012) are not yet known – have assumed they roll over from CP1
- None of these rules apply to individual foresters unless and until the Crown enacts rules to devolve its KP benefits, liabilities or obligations
- Uncertain whether foresters or landowners earn credits or bear deforestation liabilities, if any (less an issue if parties are one in the same)



Is there an accountant in the house?



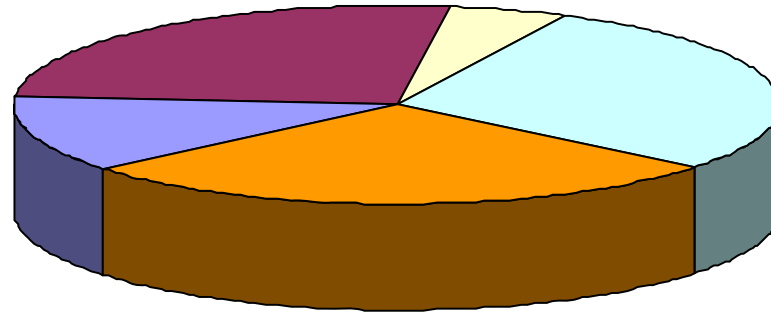
Source: *Agricultural Sector and Climate Change in New Zealand*, MAF/NZCCO slides for TPK hui, July 2004



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An accountant in the house? – cont'd

Deforestation emits no GHGs per se, but under Kyoto it creates an emission liability all the same, so now Agriculture and Deforestation are on 28% of total each, with Transport on 26% (N.B. Farbon Sinks and Waste are both negative emitters)



- Energy
- Industrial Processes
- Deforestation (without policy measures)
- Transport
- Agriculture

Source: *Sustainable Land Management and Climate Change*, MAF slides, December 2006



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Clashing calipers

- When a tree is felled and the land put to some other use, as a matter of biology not all of its carbon is immediately released (wood products can last a while)
- Under the KP, however, deforestation is counted as full and immediate carbon release
- Naturally deforestation into agriculture will no doubt lead to emitting activities (oops, pardon me)
- Work is in progress to agree on how “stored” carbon (e.g. in furniture) should really be treated under the KP
- Such measurement issues obviously further complicate the “1990 cliff” created by the KP for non-Kyoto foresters



Policy-go-round

- June 2001 – preliminary decision to partially allocated carbon credits
- April 2002 – “Preferred Policy Package” instead retained credits to government, and introduced 5% deforestation cap
- October 2002 – “Confirmed Climate Change Policy” and May 2005 announcements extended PPP, including shift to 10% cap
- December 2005 – following comprehensive policy review government talking about “managing deforestation” in CP1
- 2006 – government takes the longer view, and places all options back on the table



New Zealand current policy

- **Non-Kyoto forests** – government to retain deforestation liabilities provided they do not exceed a “cap” of 21 Mt CO₂e (i.e. 10% of forest area maturing in CP1) – otherwise its stated options are to:
 - Devolve deforestation liabilities
 - Raise the cap
 - Manage deforestation
- The cap becomes a target (regulatory chicken), or alternatively represents a “commons”, incentivising its:
 - Over-exploitation (i.e. deforesting too much)
 - Accelerated exploitation (i.e. deforesting too soon)
- Creates uncertainty for foresters contemplating new planting on Non-Kyoto land, and incentive for early harvest and land conversion
- Government wary of uncapped deforestation liability, but its “cure” is causing the unwanted disease



New Zealand current policy – cont'd

- **Kyoto forests** – government to retain sink credits and associated liabilities, at least for CP1
- Policy initially formulated when net Kyoto surplus was anticipated – 8% buffer turned out to be measurement error
- Policy crash – carbon tax inequitable, NGAs ineffective, projects cost more than they earned, agriculture's free ride, forestry policy failing:
 - Inequitable treatment relative to agriculture
 - Incentivises immediate deforestation (with agri. emissions ↑)
 - Changes could improve investment signals and certainty
 - Too late to induce desired outcomes in CP1
- Permanent Forest Sink Initiative (PFSI) is closest NZ has to an “incentive compatible” and workable scheme – allocates carbon credits on compliant land where foresters covenant not to reduce carbon stocks



New Zealand's “estimated” net position

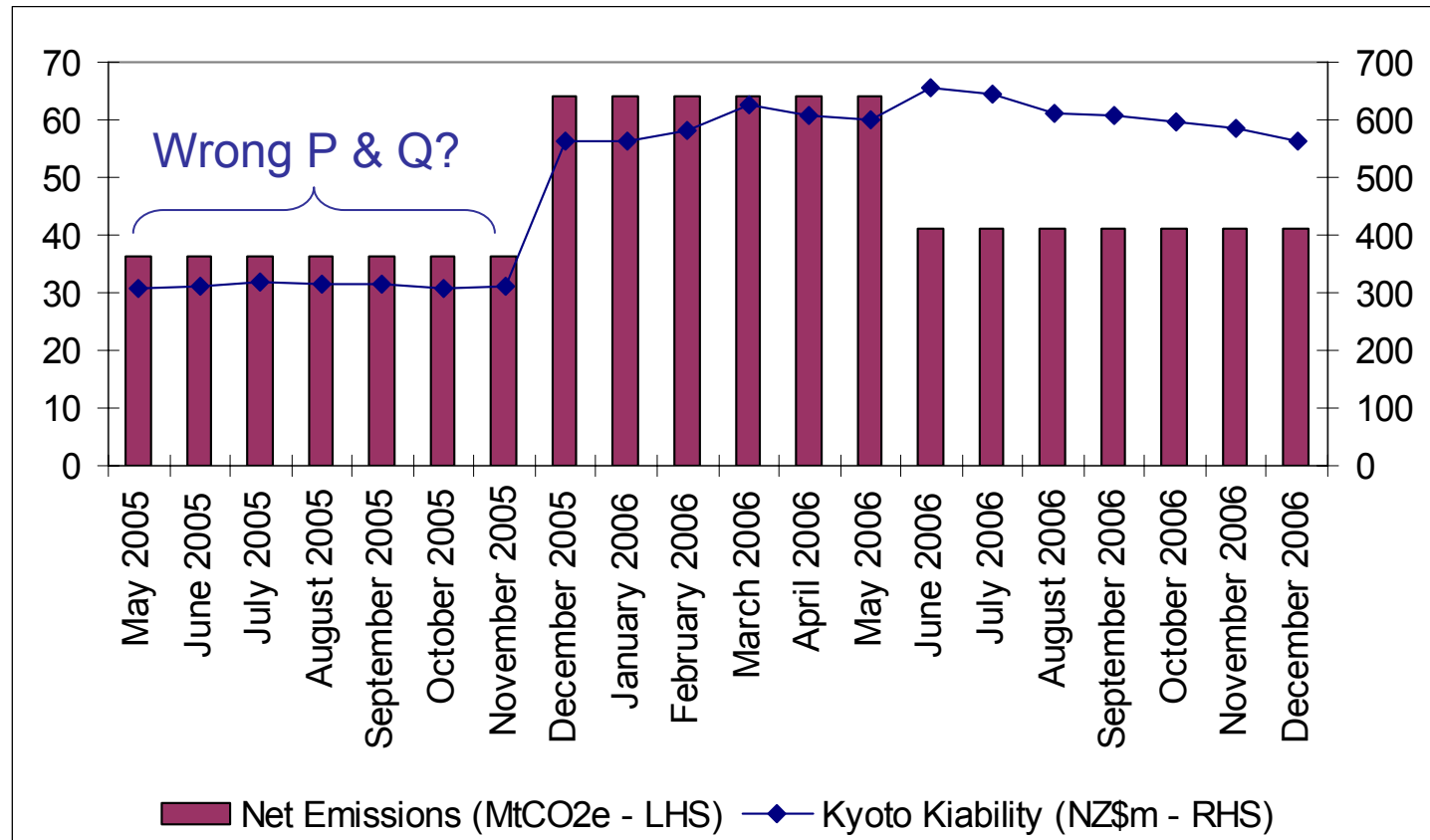
- New Zealand's net CP1 position is projected to be a 41.2 MtCO₂e deficit (versus earlier surplus)
- As at December 2006 Treasury valued this liability at \$563 million, assuming a carbon price of \$13.68 (helped out by high exchange rate, and high fuel prices last year)
- The projection assumes actual deforestation in CP1 will equal the 21 Mt cap, but MfE notes deforestation could be as high as 38.5 Mt



Treasury's death of a thousand tax-cuts

Wrong P but Right Q?

Right P but Wrong Q?



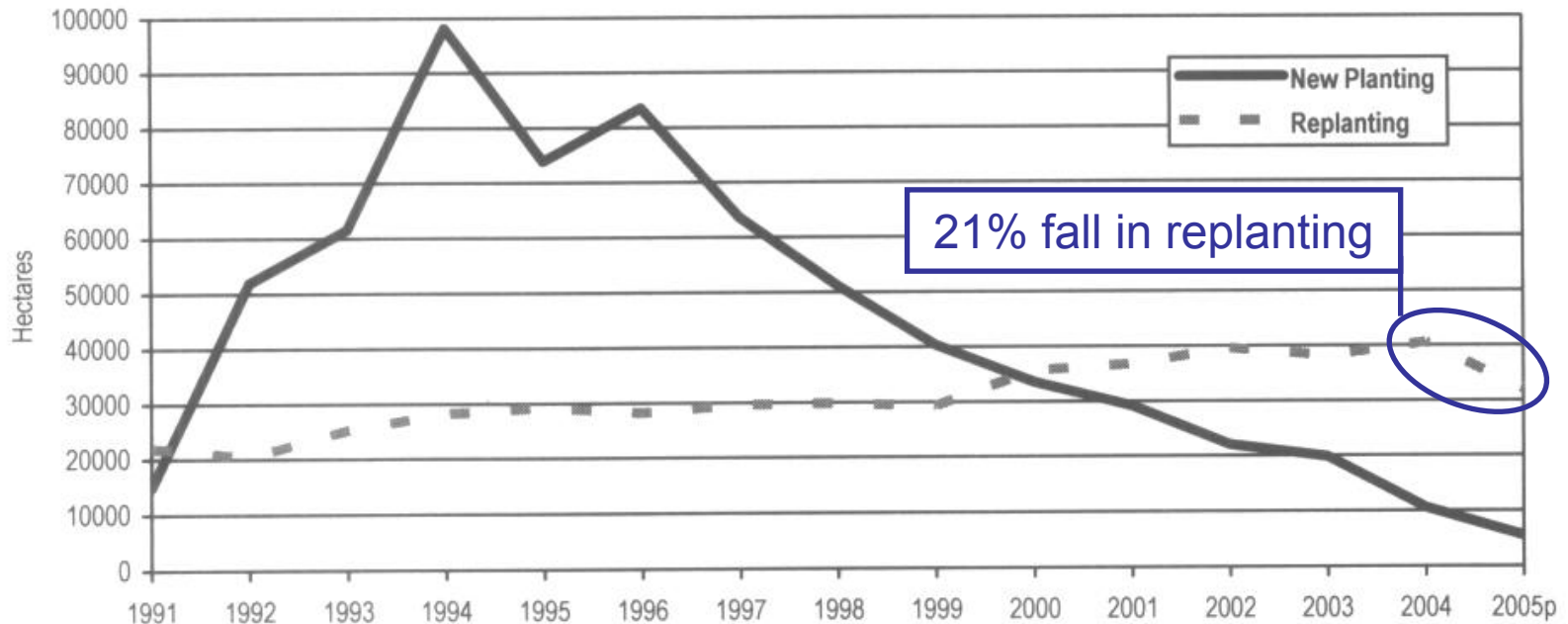
Source: Data from www.treasury.govt.nz



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“The Kyoto Chainsaw Massacre”

Graph 1: Estimated Areas of New Planting and Replanting



Source: MAF, Forestry Planting – 2005 (Provisional), 1 February 2006

p = provisional

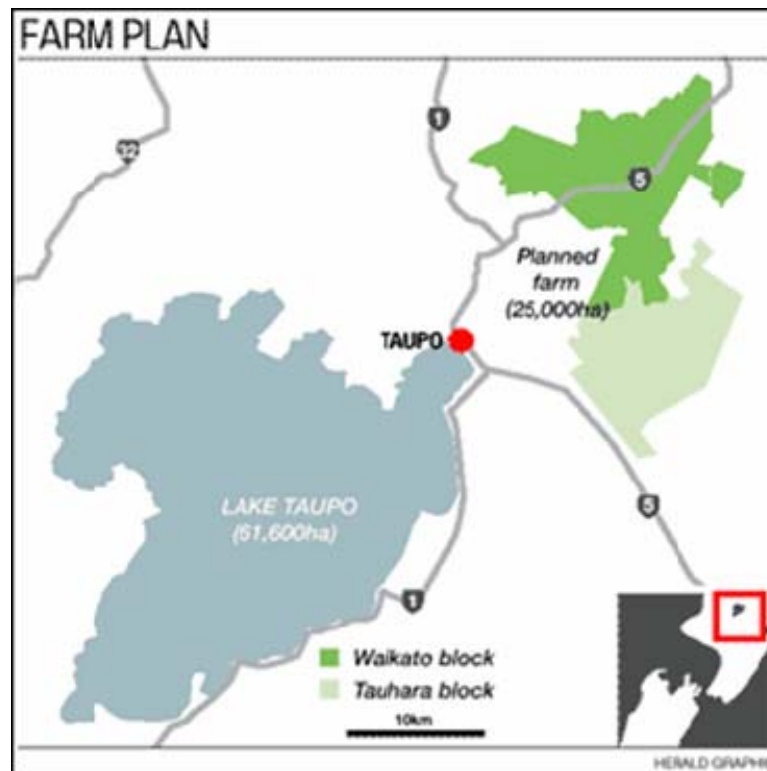
For the first time in recent history, more trees were cut down in 2006 than were planted (DP, 3 March 2007)



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Kyoto Massacre – cont'd

- Wairakei Pastoral and Landcorp are converting 25,000 ha of forests into dairying
- Other foresters (CNI and Canterbury Plains) also converting
- Economic fundamentals of dairying versus forestry an obvious contributor
- Industry cites the deforestation cap as a motivator
- My research into forest valuation under Kyoto policies supports this



Source: New Zealand Herald



Valuing non-Kyoto forests

- Have valued three deforestation liability policies:
 - “Retention”/status quo – government retains liabilities within cap → $0 < P(\text{Dev}'n) < 1$
 - “Devolution” – government devolves liabilities to foresters → $P(\text{Dev}'n) = 1$
 - “Committed Retention” – government commits to retaining liabilities come what may → $P(\text{Dev}'n) = 0$



Valuing non-Kyoto forests – cont'd

- Under my model's structure and assumptions:
 - Forest values differ modestly under alternative deforestation liability policies, with Committed Retention value the highest
 - Retention and Devolution are largely alike with even a small $P(\text{Dev'n})$, although Devolution produces higher pre-CP1 deforestation with a higher carbon price
 - Rising carbon prices reduce total pre-CP1 and CP1 deforestation under both Retention and Devolution
 - A harder stance re the 21 Mt cap (higher $P(\text{Devn})$) would raise pre-CP1 deforestation under Retention, but lower it in CP1
 - Committed Retention would minimise total pre-CP1 and CP1 deforestation, and has no higher overall deforestation!



Valuing Kyoto forests

- Devolving carbon credits and harvest liabilities increases forest value relative to status quo
- Does so by providing return stream alternative:
 - “Low” carbon prices – stick to timber production
 - “Intermediate” carbon prices – sometimes foresters will harvest, other times they will choose to sequester
 - “High” carbon prices – abandon harvest in favour of carbon farming (cf industrial companies who halt production to trade energy when power prices spike)
- Extra value arises despite harvest liabilities also being devolved, since foresters have option to defer harvest if total net returns are inadequate in any one year



Current forestry options

AFFORESTATION OPTIONS

Incentives

1. Afforestation Grants Scheme (AGS)
Pay grants to growers who plant new post-2007 forests

2. Choice between AGS and devolution of sinks & liabilities

Give each grower the choice to receive the relevant sink credits and liabilities or seek a grant under the AGS

DEFORESTATION OPTIONS

Price-based measures

Government pricing measures

1. Flat charge on land use change from forestry to another use
Impose flat charge on deforestation of non-Kyoto forests

Market-based measures

2. Tradable permit regime
Government allocates tradable deforestation permits; forest owners who deforest non-Kyoto forests are liable for emissions above the level of permits they hold

Regulation

3. Centrally determine deforestation levels option

Pass new legislation to limit rates of deforestation of non-Kyoto forests (national deforestation limit)

4. RMA options

Use RMA to control deforestation

Source: Sustainable Land Management and Climate Change: Details of Pillar 2, MAF Consultation, February – March 2007



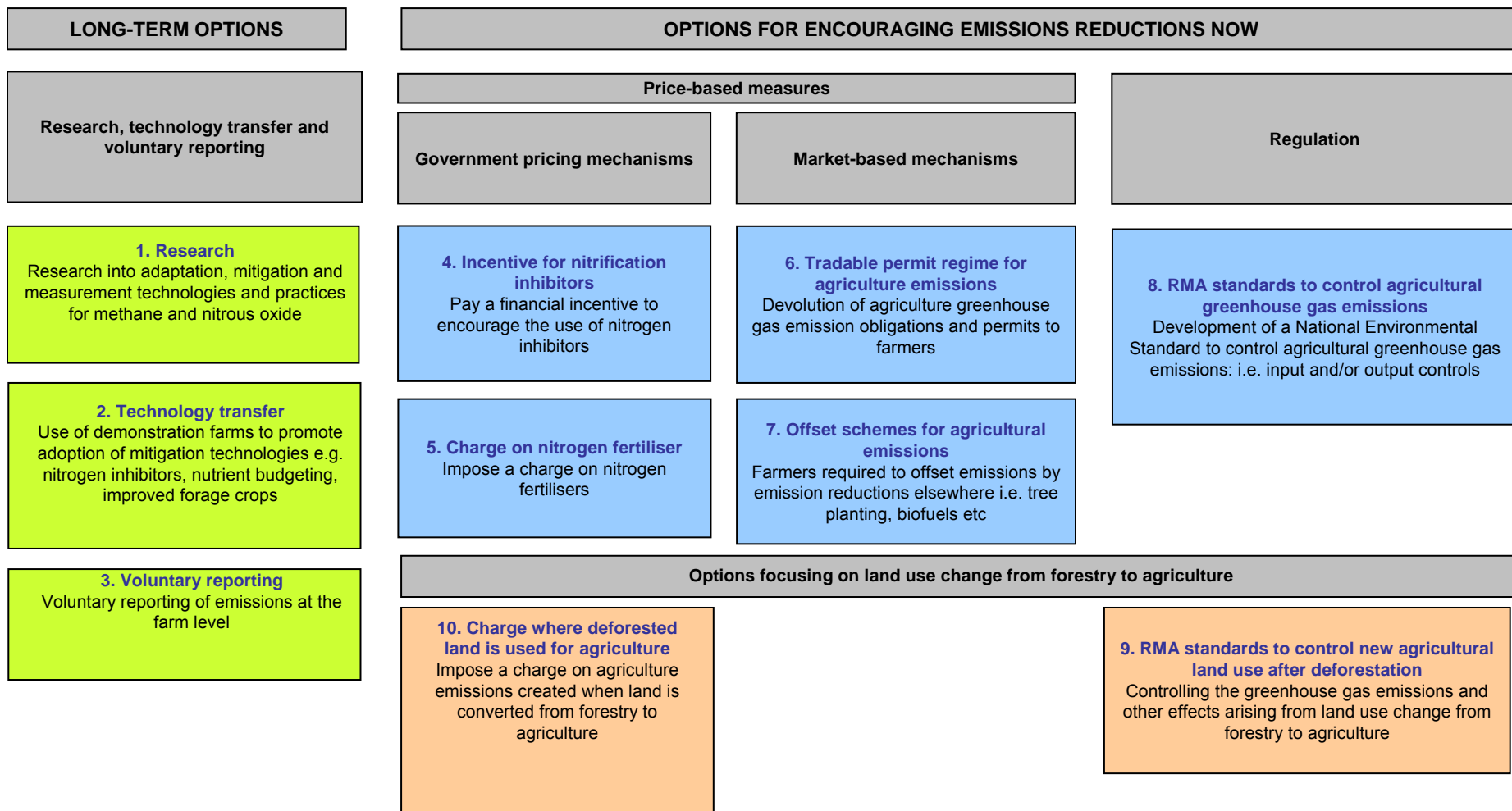
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Who left the gate open?

- Can't assess impact of climate change policies on forestry in isolation
- Must also consider the “open gate” left by absence of measures to mitigate agricultural emissions (50% of NZ's total)
- Wary foresters naturally see conversion of forest land to agriculture as the free lunch
- Minister Anderton suggests the absence of such mitigation policies relates to the current inability to reduce sheep and cattle emissions
- But farmers can reduce stock numbers and convert to forestry (or subdivide, or ...) – taxing foresters while leaving farmers off the hook creates doubly bad incentives and omits desirable ones



Current agriculture options



Source: Sustainable Land Management and Climate Change: Details of Pillar 2, MAF Consultation, February – March 2007



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Maori forestry and Treaty settlements

- General remarks about Maori being more exposed to climate change and adverse climate change policies apply – can be caught flat-footed by other deforesters (raising “cap” issues)
- Key asset in Treaty settlements is CFL land, with non-Kyoto forests on top (owned by third parties, with uncertain return dates)
- Government expects claimants to pay market value for such lands, despite considerable uncertainty regarding deforestation rules (which government knows better, and controls)
- Recent Te Arawa (KEC) settlement deed locks in forestry use on returned CFL lands for a time, side-stepping immediate deforestation issues, but other claimants might wish for greater land use flexibility
- New rules clash with 1989 forestry litigation settlement?



Holes in the dyke

- Absence of restraints on pre-2008 “emission” creates obvious “window” for deforestation, over and above the “open gate” to agriculture → valuable “option to accelerate” (deforestation)
- Absence of clear post-CP1 position on the continuation of carbon credits for forest sinks leaves “incentive hole” for would-be Kyoto foresters government can fill this if it chooses (but WTO ...) → valuable “option to wait” (new investment)
- Warming Siberia might create vast supply of competing timber, reducing overall forestry returns?



Through a looking glass dimly

- Current Kyoto rules apply only to CP1, and international negotiations continue to agree the rules post 2012
- Government has rightly signalled the need to take a long-term position on climate change policy, since it may affect long term investments, e.g.:
 - Power generation
 - Forestry
- The problem remains for government and industry alike that certain key rules beyond CP1 are unknown
→ Creates a valuable “option to wait” for new investments



Conclusion

- Industry can hold government to ransom, but not *vice versa* – government needs industry to get it out of its Kyoto jam
- Deforestation regulation, charges, or cap and trade might be effective (if not all efficient), but:
 - Create equity issues – non-Kyoto foresters’ investments are “held up”
 - Signal to would-be Kyoto foresters that what the government giveth ...
- Government’s nationalisation of carbon credits and liabilities:
 - “Holds up” existing Kyoto forest owners’ investments
 - Removes “incentive-compatible” scheme to encourage new plantings
- Early policy wrong-turn could be reversed, and government could tie its hands to mitigate uncertainties re post-CP1 rules
- Ongoing policy uncertainty is worsening the government’s position

