

# Agricultural Resource Efficiency

*Unrealized Wealth from Unrecognised Potential*

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# Best Abatement Opportunity

- Abatement of agricultural emissions is New Zealand's best opportunity to make a significant reduction in greenhouse gases during CP1
- A key reason why this opportunity remains poorly understood is the paucity of publicly available and appropriately described agricultural abatement costs

# A Convenient Untruth

*"There are currently no proven, practical and cost-effective farm practices and technologies to reduce agricultural emissions ... The Crown has decided, therefore, that it will bear the cost of the agricultural sector's non-carbon dioxide emissions"*

Memorandum of Understanding (MOU), 2004

This is still the basis for an exemption to 2013 that requires a subsidy of **\$1.3 billion** at \$30/t

# A Decade of Absent Information

- Agricultural emissions are 49% of NZ's total
- A decade after signing the Kyoto Protocol, Government has yet to publish agricultural abatement cost estimates it will stand by
- Under the MOU, PGGRC also charged with coordinating industry research into abatement options and reporting to the Government, but has not adequately reported abatement cost information

# Multi-billion Dollar Past Misesimates

| Revision            | 2002<br>Estimate<br>Mt | 2007<br>Estimate<br>Mt | Over-<br>Estimate<br>Mt | Value<br>at \$30/t<br>\$ mill |
|---------------------|------------------------|------------------------|-------------------------|-------------------------------|
| “Allowed Emissions” | 365                    | 309                    | 56                      | 1,680                         |
| Forestry Credits    | 110                    | 38                     | 72                      | 2,160                         |

| Revision                 | 2004<br>Estimate | 2006<br>Estimate | Over-<br>Estimate | Value<br>at \$30/t |
|--------------------------|------------------|------------------|-------------------|--------------------|
| Policies to Reduce Emiss | 39               | 6                | 33                | 990                |

The change in projections from a net +47.5 Mt in 2002 to –65.5 Mt in 2007 is a turnaround of 113 Mt

**Value = \$3.39 billion** at \$30/t

# Importance of Technical Potential

- Goal of abatement cost analysis is finding total cost for each unit of reduced emissions, across a range of options
- In other words: what do you get for how much money?
- Then options can be ranked and compared
- Need just two things for this analysis:
  - (i) **technical potential** for savings (quantity)
  - (ii) **total cost** of savings (dollars)

# Using Policy to Break Barriers to Uptake

- Non-price barriers often stand in the way of realising the full technical potential of options
- Many barriers reduced by policy intervention
- Abatement cost curves show the technical limits to what policy might accomplish
- MAF tends to treat non-price barriers to uptake as a given
- Uses guesstimated uptake rates to limit the quantity available in its 'imputed potentials'
- This pre-empts the scope for policy to make a difference

# Nitrification Inhibitor Potentials

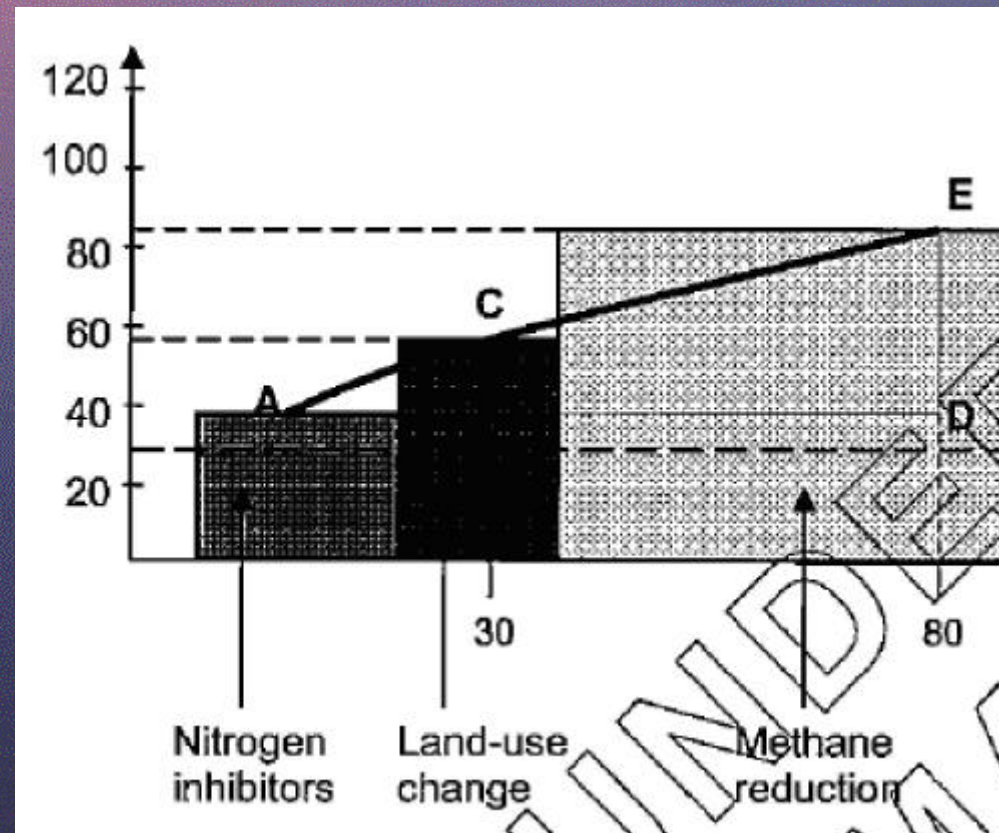
|   | Imputed Potential |                   | Technical Potential    |                             |
|---|-------------------|-------------------|------------------------|-----------------------------|
|   | MAF Estimate 2005 | MAF Estimate 2006 | Sustainability Council | Landcare AgResearch Lincoln |
| Estimated CP1 reductions in emissions, (Mt) | 2                 | 1                 | 18                     | 14                          |

MAF, ICF and Sustainability Council estimate nitrification inhibitors are profitable to apply

# Treasury's Indicative Cost Curve

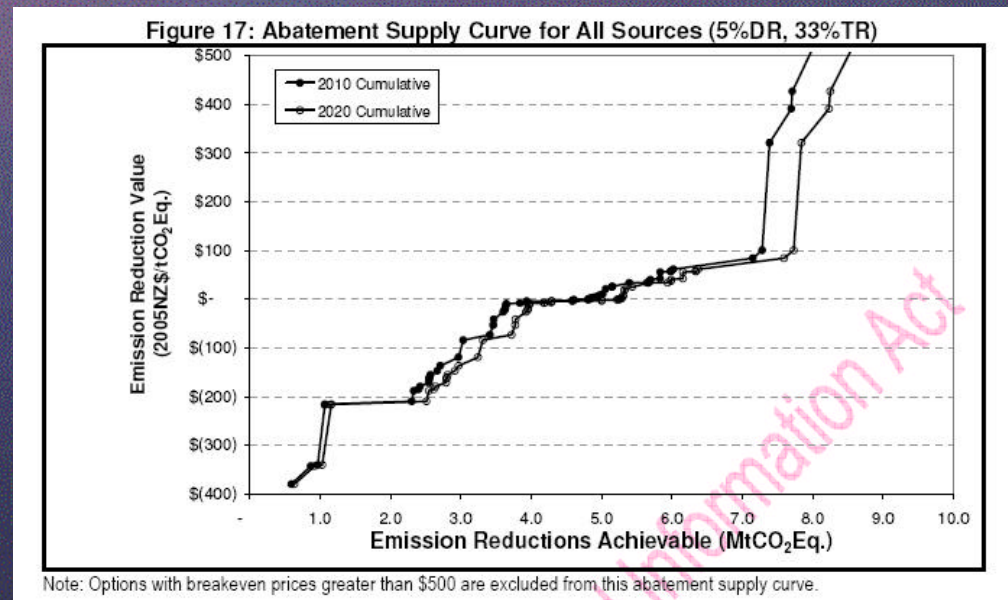
- Treasury's curve is so far removed from the data that it is misleading
- Gives not a single reference or data point to anchor the indicative costs
- Footnote states: "the actual costs are unknown"
- Yet many costs are simply uncertain

Treasury Dec 2007



# A Preliminary Cost Curve (2007)

- Agriculture accounts for over 60% of the total quantity of emission reductions ICF estimates to be available for \$30/t or less by 2010 ICF 2007
- Each of the five options costed by ICF available at a profit
- ICF engaged in more work to refine analysis



# Towards a Fuller Cost Curve

| Technique  | Proportion abated | Cost per unit |
|--|-------------------|---------------|
| <b>Commercial + measured</b>                                   |                   |               |
| Nitrification Inhibitors (N <sub>2</sub> O)                    | Large             | Negative      |
| Standoff pads (N <sub>2</sub> O)                               | Small-med         | Negative-low  |
| High sugar grasses (N <sub>2</sub> O)                          | Small-large       | Low-med       |
| Biodigestors (N <sub>2</sub> O, CO <sub>2</sub> )              | Small-med         | Medium        |
| Supplementary feed (N <sub>2</sub> O)                          | Small-med         | Small-high    |
| <b>Pre-commercial</b>  |                   |               |
| Supplementary feed (CH <sub>4</sub> )                          | Small-large       | Low-high      |
| Selective breeding (CH <sub>4</sub> )                          | Small- med        | Low           |
| Soil nutrition (CO <sub>2</sub> )                              | Low-large         | Low           |
| Biochar (CO <sub>2</sub> , CH <sub>4</sub> , N <sub>2</sub> O) | Medium-large      | Med           |

# Securing Kyoto Credits

*"For ... on farm mitigation technologies to be recognized they need to be incorporated into the national inventory that is reported to the UNFCCC"*

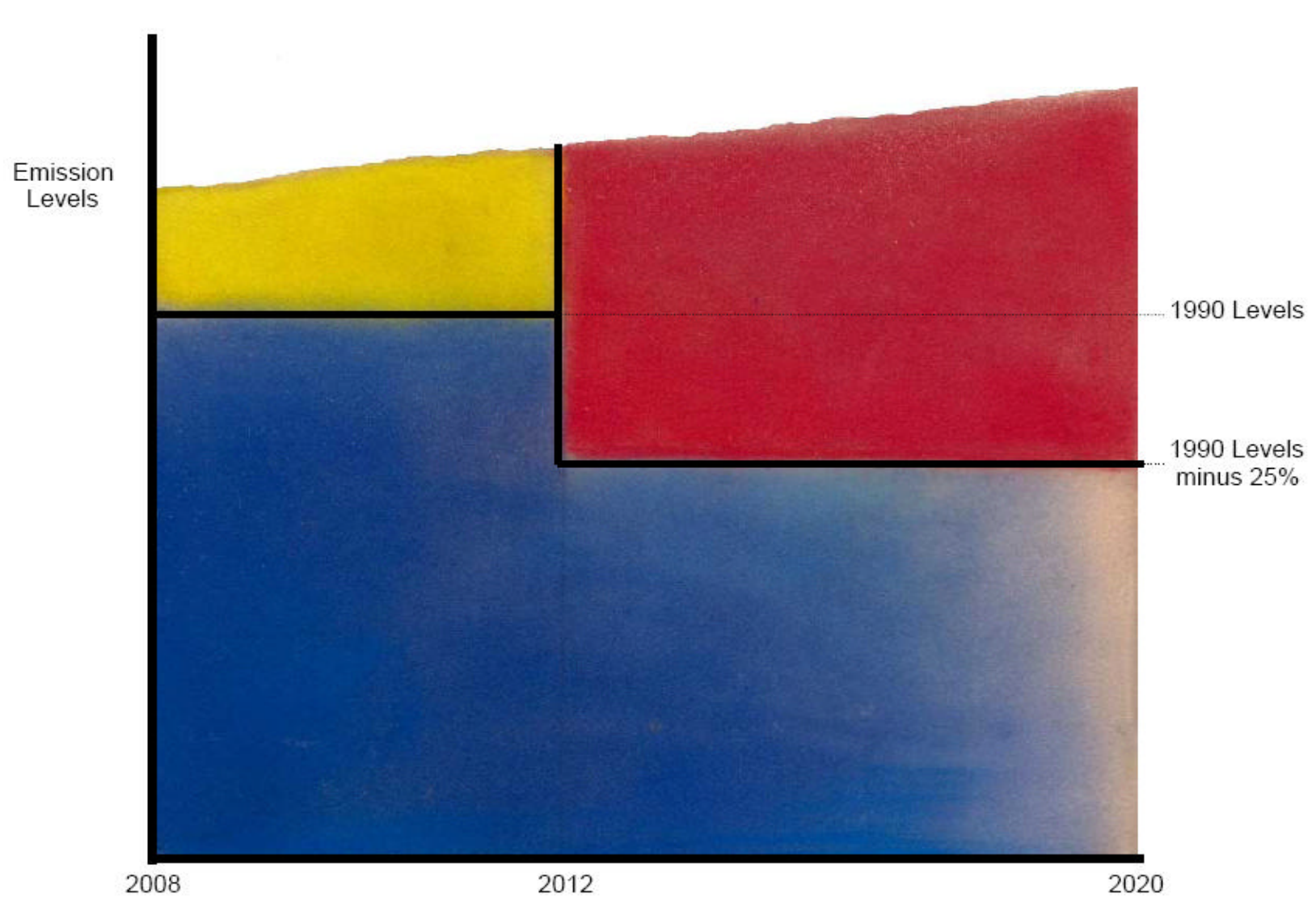
MAF 2005

- This is achieved through gaining approval for revised "emission factors" from the UN
- Reviewed annually and ones that account for nitrification inhibitors to be filed from 2009
- As Kyoto bill not calculated until 2013, priority now is to get the savings happening and measured for later incorporation in accounts

# In Excess - The Kyoto Overshoot

- Gross emissions projected at 28% above 1990 Kyoto base year levels for period 2008 to 2012
- Forestry credits projected to reduce NZ's net liability significantly
- But gross emissions the key measure
- ETS will reduce gross emissions less than 2% over CP1

# Scale of the Carbon Challenge



# Carbon (Policy) Capture

- The ETS fails entirely as a strategic response to future international emissions obligations
- NZ agrees world to cut 25-40% below 1990
- It will arrive at 2013 with gross emissions at least 26% above 1990 levels (with ETS)
- ETS is not a break with history; it is a continuation of the past
- It accepts business as usual emissions and redirects costs of the Protocol away from politically-influential emitters

# Changes Required to ETS

Two priority changes required are:

- All sectors, including agriculture, begin taking financial responsibility for their emissions by 2010. Initial levels of responsibility are progressively ramped up at the same pace
- There will be good cases for the Government providing transitional assistance, but it is completely unnecessary to pre-commit so far into the future, at such a high rate of subsidy to every major emitter and pastoral farmers