

The background of the slide is a photograph of a coastal town built on a steep cliffside. The sky is a deep, dark blue, suggesting dusk or dawn. The town's buildings are silhouetted against the sky, with some lights visible. The foreground shows a dark, calm body of water.

How can agriculture be included in an emissions trading scheme? Some thoughts from New Zealand

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Why include agriculture?

New Zealand is in a unique position as a developed country

- Agriculture is around half of New Zealand's gross emissions

We need to affect agriculture to:

- contribute effectively to global mitigation and
- cost effectively comply with our international commitments now and in the future.

What is agricultural emissions trading?

- The NZ government has an allocation of Assigned Amount Units under our Kyoto obligations.
- Carbon sequestration can supplement these
- NZ can buy additional units from the international market.

Measuring emissions

- New Zealand generates a 'National Inventory' each year
- Net greenhouse gas emissions are estimated using international rules.
- Assigned amount units surrendered must match inventory emissions.

Agricultural ETS: Devolution of obligations and emission units

If point of obligation is at farm

- Issue tradable emission units to farmers by sale or gift.
- Make farmers responsible to
 - Report information to model greenhouse gas emissions from their activities
 - Surrender emission units that match the modelled emissions

Alternative is processor level

Challenges in including agriculture in an ETS

- Point of obligation/reporting and verification
- Leakage
- Distribution – cost bearing
- Compliance

Point of obligation: dairy/meat processor?

- Pro(?):
 - relatively easy
 - encourages domestic consumers to consumer less
 - spreads the cost of Kyoto compliance more broadly – but not if free allocation is generous
 - would make farm level obligations look more attractive
- Con:
 - rewards reductions in output, not emissions intensity – emissions per unit of output

Why consider farm level?

The mitigation options that reduce emissions intensity can be monitored only on the farm

Therefore must collect farm level data to provide efficient incentives

In the long term farm level is optimal

Reporting and verification

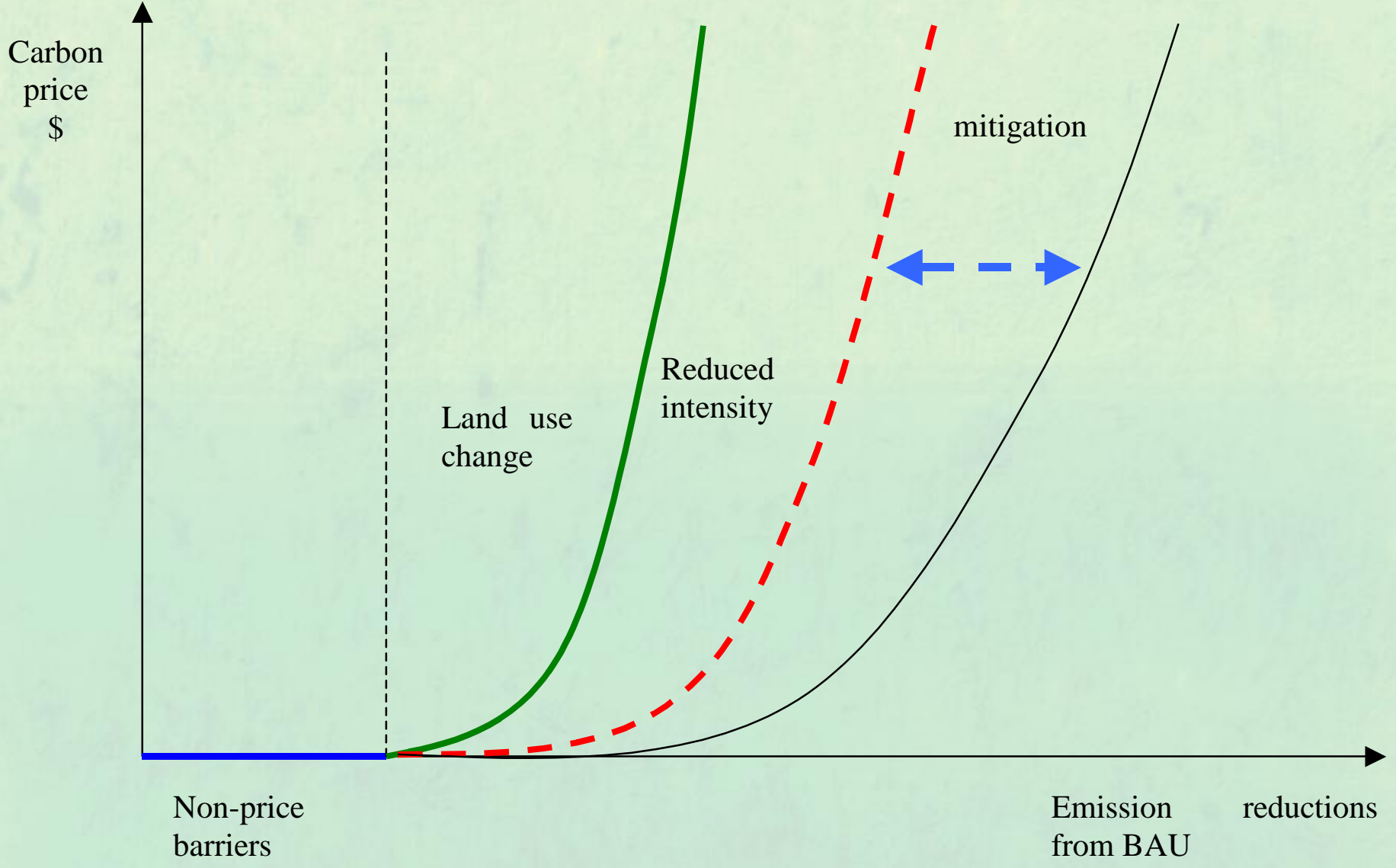
Emissions cannot be directly measured

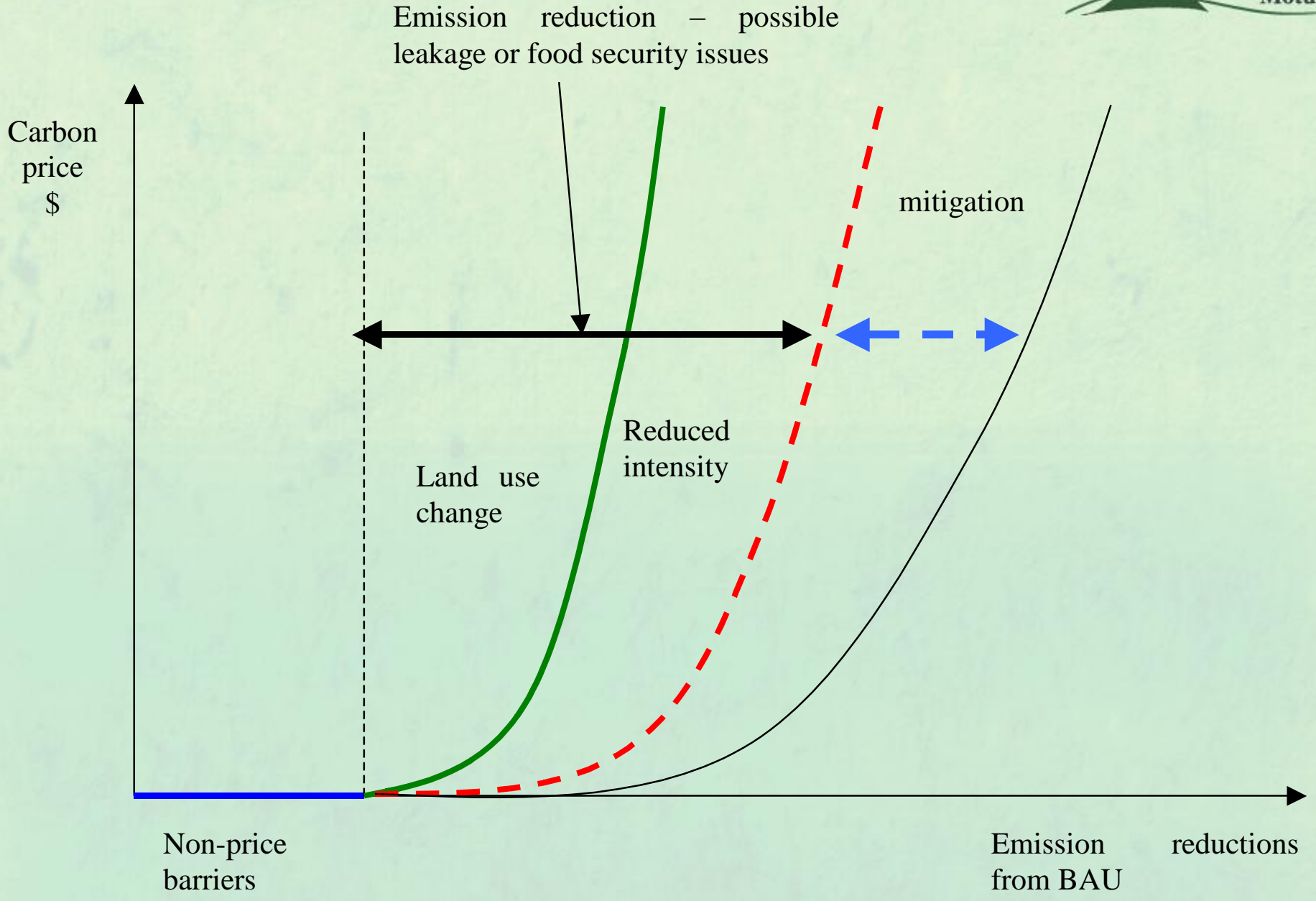
- Need to determine emissions through models or proxies
- for pastoral agriculture can be done through **OVERSEER**

On farm monitoring

- Dairy farms already produce nutrient budgets using OVERSEER – but not yet in verifiable way
- Sheep/beef farms could use this model with the help of fertiliser companies (around 30,000 properties)
- High costs – very small properties will need to be excluded.

What are we gaining with emissions trading?





Agricultural mitigation options in NZ

Methane

- Reducing stock numbers and production
- Increasing productivity – output per GHG (dry matter)

Nitrous Oxide

- Reducing stock numbers and production
- Nitrification inhibitors
- Reducing fertiliser use
- Wintering off

Addressing leakage

Option 1 output-based allocation

If emission units are allocated to farms on the basis of current output, farmers have less incentive to reduce output.

All farmers have an incentive to reduce emissions intensity

No incentive to alter domestic diets

Addressing leakage

Option 2 Border tax adjustments

- Rebate units on exports to create a more level playing field with international competitors
- Achieves better outcome than output-based allocation
- WTO implications are still unclear – probably not a short term option.

Distribution - Cost bearing

- Major impact is on farm profitability and hence land values:
 - loss of equity and possible bankruptcy
 - Long term losses not directly related to current output – loss of option value.
- Some impacts on workers
- Transitional impacts on local communities

Distribution – cost bearing

If we use free allocation (or its value) to address leakage we have not targetted assistance accurately toward those who lose.

Change allocation as agreement becomes more global

Compliance

Technically farm level emissions trading is feasible but it's costly and

Farm level emissions trading requires acceptance and cooperation from nearly all farmers – we cannot enforce it otherwise.

The short term gains may also be low

Transitional options

Put tax on fertiliser at manufacturer level

Processor level only – with output-based allocation so price low

Move to border tax adjustments when they are possible

Go to farm scale only for dairy

- Must account for emissions of all stock that move between systems

Reward N-inhibitors directly

Conclusions

- Agriculture can be brought into emissions trading but monitoring costs are likely to be high and compliance is a challenge
- Long term - farm level obligation
- Long term - free allocation based on productive capacity not output (and phased out)
- Are the on-farm mitigation options worth the cost of farm scale yet?
- We need lots of research – science and economics – fast.

www.motu.org.nz

Kerr and Sweet (2008)
Kerr and Kennedy (2009)