The economics of farm-level emissions

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The Big Picture

- The economics of farm-level emissions crucially depend on how emissions are valued. Those values, in turn, depend on government policies.

- The Federal Government’s current policy is:
  
  While there is no global agreement to deliver an atmospheric CO$_2$ concentration of 450 ppm, then by 2020 Australia will unconditionally reduce its emissions by 5 per cent below 2000 levels.

- This target is also supported by the current Opposition.
Australia’s annual emissions
The Big Picture

- Currently Australia’s emissions are increasing and are projected to be 124 per cent of 2000 levels by 2020.

- Note: to reduce Australia’s emissions by 5 per cent represents a 27 per cent reduction on a per capita basis by 2020 compared to 2000. Why?

- Between 2000 and 2020 Australia's population is projected to grow by around 25 per cent. Hence the per capita challenge is great!
Key current government policies

- Carbon Pricing Mechanism
- Carbon Farming Initiative

Note: The current Opposition
  (i) vehemently opposes the Carbon Pricing Mechanism yet
  (ii) supports the Carbon Farming Initiative.
Under the carbon price mechanism, the country’s 500 biggest emitters will have to pay for their emissions. The emissions price will be $23 per tonne of CO$_2$-e starting 1 July 2012 and increasing by 2.5 per cent in real terms per year until 2015 when a market-based floating price starts.

Some businesses will reduce their emissions. Some businesses will purchase credits (also known as offsets). Some will simply pay for their emissions and mostly pass-on those payments to their consumers.

Emissions from agriculture are not subject to an emission price. Farmers do not pay for the emissions from their farms; even though agriculture is responsible for around 16 per cent of the nation’s emissions.

Agriculture produces most of Australia's methane and nitrous oxide emissions. 58% and 76% of Australia's methane and nitrous oxide emissions, respectively, come from agriculture.
What happens to the Carbon Pricing Mechanism if there is a change in government?

- The current Opposition promises to scrap it if it wins the next election, currently due in the second half of 2013.

- However, in the Senate the Greens support the CPM, so the Opposition may have to wait until the next half-Senate election in mid-2016 before they might win enough Senate seats to repeal the carbon laws. A double dissolution is likely.....
Carbon Farming Initiative

- Funding of $45 million over four years was announced in Nov 2010 to develop methods for farmers, forest growers and landholders to generate credits able to be sold in domestic and international carbon markets.

- These credits are known as Australian Carbon Credit Units (ACCUs). These credits are generated by approved emission abatement (offset) activities.
Carbon Farming Initiative

The process for establishing ACCUs is set out in legislation. It’s based on projects where the project:

(i) proponent must be a "fit and proper person";
(ii) uses an approved methodology;
(iii) is on the "positive list" of activities and is not common practice.
What offset options are eligible under the Carbon Farming Initiative?

- reforestation, revegetation, native forest protection, or improved forest management
- reduced emissions from livestock or feral animals
- avoided de-vegetation
- rangeland restoration
- improved vegetation management and enhanced or managed regrowth
- maintaining or increasing carbon stores in soil
- savannah fire management and
- manure management and reduced fertiliser emissions.
Important conditions for CFI projects

- Projects can be excluded from the CFI scheme if they significantly impact on access to land for agricultural production, or have a material impact on water, biodiversity, employment, or the local community.
There are two types of carbon credits

Kyoto-compliant ACCUs can be:
(i) used to meet at least 50% of a liable business’s obligation for each year up until 2020;
(ii) exported to be used overseas.

Non- Kyoto-compliant ACCUs (those that can’t be counted towards Australia's emissions target under current international carbon accounting rules) and which cannot be used by the 500 big emitters under the CPM, will be purchased by the Commonwealth Government.

The Government has committed $250m over six years from 2012/13 to buy non-Kyoto-compliant ACCUs (e.g. involving soil carbon).
The Positive List identifies 15 activities including:

(i) establishment of permanent environmental plantings;
(ii) establishment of permanent mallee plantings after 1 July 2007;
(iii) re-establishment of native vegetation on private land; and
(iv) capture and combustion of methane from waste deposited in a landfill facility before 1 July 2012.

The Negative List includes the establishment of a forest as part of a managed investment scheme.
What about Ridgefield’s emissions? How might current carbon policies affect this farm?

- 4 soil classes (but mostly landscape units)
- Main enterprises are sheep, pastures, wheat and canola
- Examined steady-state profit-maximizing farm plans using current costs, recent prices (average of last 5 years) and the recent history of yield performance.
For Pingelly only 6 of the last 20 years have recorded rainfall better than the long term average.
Emission sources for Ridgefield
Emissions from Ridgefield

Emissions (t CO2 -e)

Percent of farm in crop
Ridgefield net returns

Profitable land use involves zonal farming
Less emissions does not necessarily mean less returns

Net return ($) vs. Farm emissions (tonnes of CO2-e)

- 40% crop
- 50% crop
- 30% crop
- 20% crop
If Ridgefield had to pay for its emissions how would net returns change?

![Graph showing change in net returns with percent of farm in crop](image)

- e.g. 2500t * 23$/t = $57500 per year!
Impact on Ridgefield returns from impending carbon tax

~6-8%
Are trees for carbon storage economic on Ridgefield?

- For Ridgefield, trees are only planted on the poorest soils (for crops or pasture) and only when the price is >$65 per tonne CO$_2$. 
Can we feed sheep differently without affecting their performance and yet reduce their emissions and then claim offsets?

- Some years away ......??
Key Points

• Farm emissions are not part of the Carbon Pricing Mechanism ……but some costs of emissions control will be passed on to farmers, making them 6-8% worse off.

• About ¾ of Ridgefield’s emissions come from its sheep.

• The most profitable farming system for Ridgefield is zonal farming with around 40% of arable area in crop.

• Tree plantations are only part of profitable farm plans when the carbon price is very high >$60 per tonne CO₂-e.
Thank You