

BACKGROUND

In May 2009 the Macalister Demonstration Farm (MDF) made a successful application for a project to undertake a carbon emissions audit of the farm as a case study. The project is known as the 'Carbon Ready Dairy Demonstration' and will identify the source and size of carbon emissions generated by normal operations. This information has then been used to develop a Carbon Emissions Reduction Plan that includes strategies to minimise and offset carbon emissions and an analysis of the financial impact of the plan on the farm business.

The Government announced in December 2009 that Agriculture was to be excluded from the Carbon Pollution Reduction Scheme indefinitely. In 2010 the **Carbon Farming Initiative (CFI)** was developed by the Gillard Government in response to calls from the farming sector to recognize the contribution that agriculture can make to a reduction in carbon emissions. Legislation is currently in the parliament and has been praised by some for the opportunity it gives farmers to get a return on investment in emission reduction and roundly criticized by others who think the rules are so tight that it's not worth the effort.

How does the Carbon Farming Initiative Work?

First, some background. Carbon emissions are measured in carbon dioxide equivalents (CO₂-eq) with the 'Global Warming Potential' of each gas measured against the impact of carbon dioxide. While carbon dioxide represents 1 CO₂-eq, the other greenhouse gases emitted by agricultural activities, although emitted in small volumes, are much more potent. Each unit of methane (CH₄) is 21 CO₂-eq and each unit of nitrous oxide (N₂O) is 310 CO₂-eq, or has 310 times the warming power of carbon dioxide. These two gases must be the target of any emissions reduction strategy for agriculture.

As a signatory to the Kyoto Protocol Australia has agreed to international standards as to how carbon emission reductions are counted. While the rules may seem a bit strange, they have to be broad enough to cover all circumstances. In the CFI these rules have been interpreted as follows. Emissions must:

- Be additional – more than under 'business as usual', activity must be new to the industry – there will be a list of approved initiatives, some of which dairy farmers will already be doing.
- Be permanent – for carbon emissions offset like tree growing or soil carbon capture it must be for at least 100 years. For tree planting if you sell your farm then

- the obligation passes to the next owner. Will that be attractive to buy?
- For emissions avoided, like reducing losses from fertilizer or reducing ruminant methane, the permanence rule does not apply but you will still have to prove that the reduction in emissions is real.
- Avoid leakage – must not cause an increase in emissions elsewhere. For example, moving young stock off the farm will reduce farm emissions but transfer the obligation elsewhere – this can't be claimed as a reduction in emissions.
- Be measurable and verifiable by a qualified third party – this is one of the costs. You can only sell what you have captured and if the amount of carbon captured falls and you have already sold it you will have to buy the difference from someone else at the current market price. May be risky and, as the market develops, may be expensive.
- Be conservative so claims are not over-estimated – this is good risk management.
- Be consistent with international rules and conventions;
- Be measured by techniques based on science – an agreed set of measuring techniques are being developed that everyone will have to use.

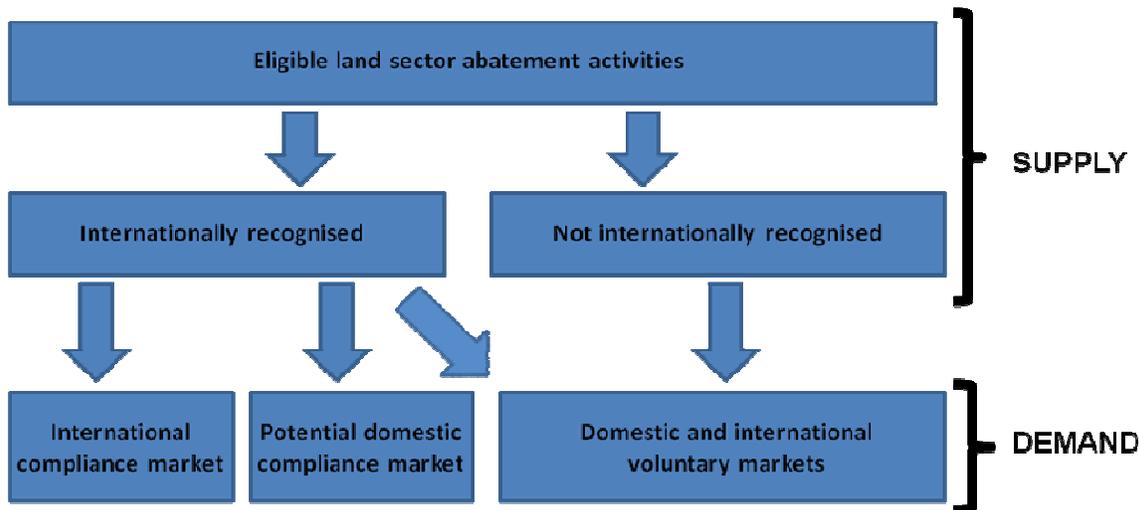
What makes the CFI an advance on what was previously available is that there will now be two types of carbon credits available for farmers to claim – one for the highly regulated, Kyoto compliant market (mostly for tree planting), and one for the more flexible domestic market. The Kyoto carbon credits can be traded on the world market or used by local manufacturers to comply with their obligations so prices will eventually follow world prices; the domestic carbon credits can be traded to companies who see a marketing advantage to being carbon neutral and will probably be worth less although your obligations remain the same. In particular, the domestic trading market is still in development but will be in place quickly once there is something to trade. The market structure is shown in Fig. 1.

What are the Opportunities?

Under the CFI there are a number of eligible activities that farmers can do to become involved in the scheme. Some of the opportunities will be more applicable to some industries more than others. For example, increasing soil carbon will be more achievable for a cereal cropper where base soil carbon levels are low than to a high producing

Fig. 1. Emerging Carbon Trading Markets

(Source: Dept of Climate Change & Energy Efficiency, *Carbon Farming Initiative Consultation Paper* (Nov. 2010))



dairy farmer who will typically have soils with a high carbon content.

Whatever you do has to go through a process to be approved in advance. You can't just go and do something and expect to get paid. So, is there anything in it for dairy farmers?

- Reforestation and revegetation – There are some tight rules around tree plantings that you must be aware of to comply – at least 10 metres wide and at least 0.2ha for a start. Apart from tree belts and on turnout paddocks, it's hard to imagine dairy farmers turning over productive land to trees. My calculation says that you would need to get near \$100/t CO₂-eq to make it worthwhile in the Macalister Irrigation District growing 13-14 tDM/ha/yr. The carbon price will be less for less productive land to make that change in land use worthwhile. Talk at the moment is for an opening price for carbon of \$20-30/t CO₂-eq. Plant trees for all the other good reasons on your farm and pick up a benefit if you can.
- Reduced methane emissions from livestock – This is the biggest source of emissions on farm. Highly digestible feed and cereal supplements, along with products like Rumensin, are the best way to minimise emissions at the moment. Many dairy farmers are already doing this. There is a lot of research going on to develop a product that can be introduced to the rumen to change the way the microbes work and reduce methane production. The good news is that any

reduction in methane production will result in an increase in milk production. Wait for that one.

- Reduced fertiliser emissions – Products are being developed to add to urea to slow the conversion to nitrous oxide. The upside is that will less lost to the atmosphere there will be more N available to the pasture to boost growth rates. Also worth waiting for but in the meantime follow best practice to reduce emissions by adding fertiliser only when it is needed and never when paddocks are waterlogged.
- Effluent management – Emissions released from dairy effluent are very low from a whole-farm point of view. There may be opportunities to cover ponds to collect methane and then burn it off to the less dangerous carbon dioxide to claim a credit. You will have to do the sums to know if it is worth it.
- Reduced emissions from soil or increased soil carbon sequestration – for many farmers believe that this is the great hope but for dairy farmers it is the most risky. Normal farming activity like cultivation and drying off paddocks over summer will bring a fall in soil carbon, as will overgrazing. Many dairy soils, particularly in irrigated/summer growing areas, already have high levels of organic matter (soil carbon) so opportunities are very limited. The best way to raise soil carbon is to under-utilise grown pasture – at the carbon price suggested it is far from worth it. Increasing soil carbon levels through management actions for soil health is a good thing but trying to then sell stored soil carbon into a CFI market is a very risky thing.

How does a farmer get involved?

Farmers and landholders can participate by:

- Obtaining the necessary approvals and managing and reporting the project themselves;
- Using a specialist service provider to assist with project reporting and management; or
- Allowing other companies, known as offset aggregators, to undertake the offset activity on their land. They will manage offset projects on a number of farms, possibly each with a different deal.

This works in one of two ways:

Scenario 1: Farmer A chooses to undertake a project to reduce fertiliser use on his farm. He finds the appropriate CFI methodology to use, becomes a recognised offsets entity and gets his project approved by the CFI scheme administrator. Farmer A then undertakes the project, using less fertiliser on his farm, and each year completes a report, has it audited and submits it to the administrator. At the end of each year, some credits are issued into Farmer A’s account in the Registry based on the amount of emissions reduced, which he can sell to another entity that trades in CFI credits.

Scenario 2: Farmer B has decided she wants to grow a carbon sink forest on her farm, but doesn’t want to have to worry about the paperwork, so appoints an agent to look after this on her behalf. After approval, Farmer B plants the trees and looks after them. The agent takes care of the project application, reporting and auditing. The agent may charge a fee for their services and all carbon credits are issued to Farmer B which she can sell to another entity that trades in CFI credits. Alternatively, Farmer B can hand over the rights to the CFI credits to the agent who will pay the farmer a fee for growing the trees (this fee may not be related to the value of the credits).

(Source: Dept of Climate Change & Energy Efficiency, *Carbon Farming Initiative Consultation Paper* (Nov. 2010))

Where does that leave us?

Already there is a market to trade savings in energy consumption through Renewable Energy Certificates (RECs) so it is well worthwhile getting an energy audit at the dairy to know in advance where the best gains might be made. Very often emission reduction results in cost savings. Although some changes will require investment first, some of them will be cheap and easy and worth doing straight away.

As it stands, the CFI has the potential to encourage some farmers along to reduce emissions and receive a benefit for it. However, for dairy farmers there is unlikely to be significant benefit until there is a high-tech way to reduce methane emissions from our cattle and, to a lesser extent, until the fertiliser inhibitors are developed.

As carbon trading is introduced it is likely that new opportunities will emerge as a wider range of activities are recognized for their potential to reduce emissions and more players are actively operating in the marketplace. It is conceivable that in the future private companies will approach dairy farmers with incentives to invest in a range of emission reduction measures in order to pick up the carbon credits for any emissions saved. For this reason it is critical that you stay informed so that you can make the best decisions for your business.

In the meantime, reduce emission by following best practice in irrigation, fertiliser application and energy use, but think very carefully before you get too involved in generating and selling carbon credits. There may well be a sting in the tail for the unwary.

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