



**Primary  
Industries**

A photograph of a landscape. In the background, a power plant with several tall smokestacks and two large cooling towers is visible under a cloudy sky. The foreground shows a field with rows of young trees and a person wearing a yellow high-visibility vest and a yellow hard hat, standing in the field. The text 'Starting a Carbon Farming Plan' is overlaid in white on the image.

# Starting a Carbon Farming Plan

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# What is a carbon plan?

- This won't be a recipe for a carbon management plan.
- You need to decide what will work for you.
- These are some pointers



# What is a carbon plan?

- Can be as complex or simple as you want:
  - Detailed management actions for each paddock
  - Strategic statements of what you are doing/why you want to do it.
  - Anything in between.

# What is a carbon plan?

- Why do you want a carbon plan?
  - Have a better farm?
  - Build resilience?
  - Access carbon markets?
  - Make money from carbon?
  - Comply with legislation?
  - All of the above?

# What is a carbon plan?

- You need to decide what you are going to comply with:
  - Voluntary?
  - Compulsory?
  - Kyoto compliant?
  - CFI compliant?

# What is a carbon plan?

- What will it include?
  - Soil
  - Trees?
  - Soil and trees?
  - Reducing emissions?

# What is a carbon plan?

- Managing Land for Carbon workshop
  - Somewhere in between
  - Target key areas with a best bet



# Carbon trees

- Trees ain't trees
  - Do you already have some?
  - How old are they?
  - Are they planted, plantation, regenerated?

# Carbon trees

More than 0.2 hectare, over 2m and covering 20% of the ground at maturity

Plantations are excluded except under special conditions

Private land or under long term lease from government.

	Native planting	Mixed native regrowth from residual seed	Existing
Before July 2007	Allowed if under the “Greenhouse Friendly Initiative”	Allowed if the regrowth has been encouraged by management changes (after 1990?) of stock, feral animals , weedicides or mechanical suppression.	Fail the “additionality” test. Not specified in the draft regulations but credits may be allowed over 20 years for that portion for which you otherwise have a harvestable right.
After July 2007	Allowed but not on conservation land. Plantations restricted on land where rainfall exceeds 600mm annually (need offset water rights)		

# Landholder Requirements

- Registration
  - Register directly (fit and proper person test)
  - Register through an “Aggregator” for a fee but retain units
  - Sell unit rights directly to registered “Aggregator”

# Landholder Requirements

- Methodology
  - Register their own methodology for measuring units
  - Copy an existing published methodology (currently only 4)
  - Use the “Aggregator” registered methodology

# Landholder Requirements

- Title

- The agreement to sequester carbon by particular management of an area of land will be registered on the land title.
- This may increase land value while carbon accumulates (decrease land value once accumulation reaches its maximum?)

# Landholder Requirements

- Unit types
  - Kyoto compliant Australian Carbon Credit Units (high demand, high value, mainly trees)
  - Non- Kyoto compliant ACCU (lower demand, lower value, includes soils )
  - See Kyoto article 3.4

# Kyoto Protocol

- Article 3.4 covers a mixed group including agricultural lands, soils and natural changes to forests.
- When Australia ratified the Kyoto Protocol in 2007 it did not sign article 3.4 since it would then be liable for emissions from bushfires.
- Since Australia did not sign article 3.4 it cannot count carbon sequestered in soils as credits for greenhouse gas reductions.

# Kyoto Article 3.4

Prior to the first session of the Conference of the Parties serving as the meeting of the Parties to this Protocol, each Party included in Annex I shall provide, for consideration by the Subsidiary Body for Scientific and Technological Advice, data to establish its level of carbon stocks in 1990 and to enable an estimate to be made of its changes in carbon stocks in subsequent years. The Conference of the Parties serving as the meeting of the Parties to this Protocol shall, at its first session or as soon as practicable thereafter, decide upon modalities, rules and guidelines as to how, and which, additional human-induced activities related to changes in greenhouse gas emissions by sources and removals by sinks in the agricultural soils and the land-use change and forestry categories shall be added to, or subtracted from, the assigned amounts for Parties included in Annex I, taking into account uncertainties, transparency in reporting, verifiability, the methodological work of the Intergovernmental Panel on Climate Change, the advice provided by the Subsidiary Body for Scientific and Technological Advice in accordance with Article 5 and the decisions of the Conference of the Parties. Such a decision shall apply in the second and subsequent commitment periods. A Party may choose to apply such a decision on these additional human-induced activities for its first commitment period, provided that these activities have taken place since 1990.

# Methodologies

- Reforestation, forest management and native forest protection;
- Savanna fire management;
- Landfill gas recovery;
- Manure management;
- Management of methane from livestock; and
- Soil carbon and biochar.

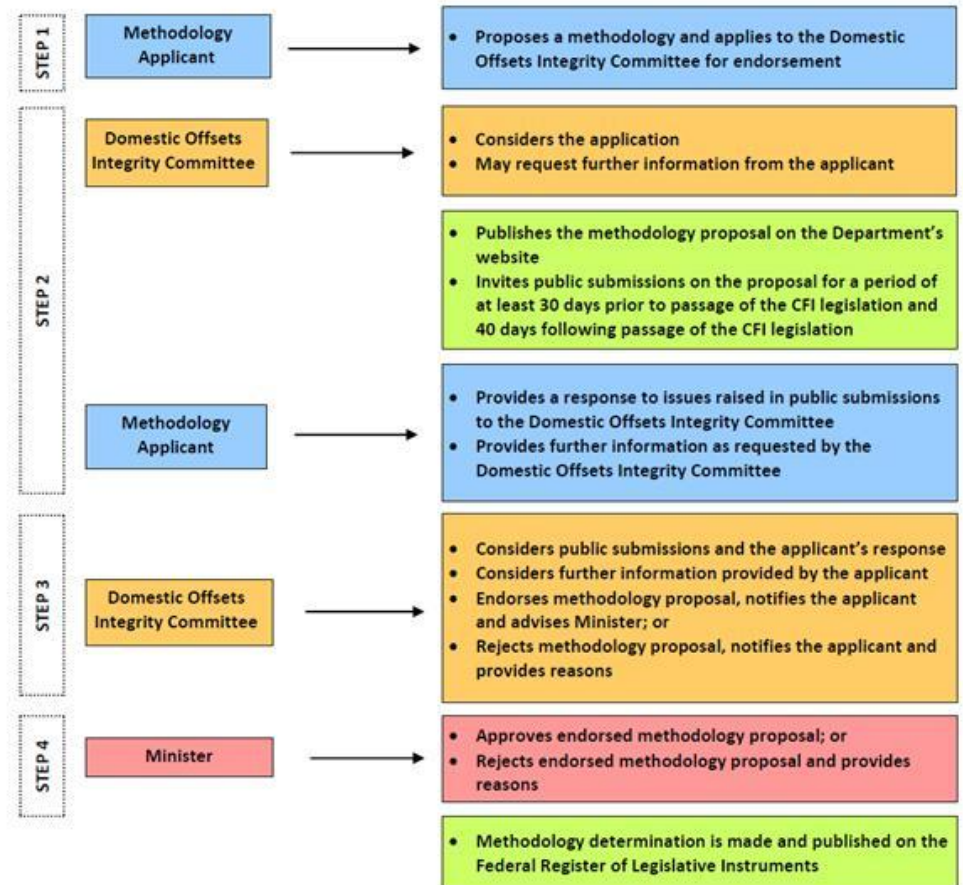
# Methodologies

- **Offsets integrity standards**
  - Additional
  - Permanent
  - Accounting for all emissions sources and sinks
  - Accounting for variability
  - Measurable and verifiable
  - Internationally consistent
  - Supported by peer-reviewed science

# Preparing a draft Methodology

- **Step 1: Determine whether a new methodology is necessary**
- **Step 2: Define the scope of the methodology**
- **Step 3: Define process for identifying a project baseline**
  - Historical baselines
  - Projected baselines
  - Comparison baselines
- **Step 4: Define greenhouse gas assessment boundary**
- **Step 5: Define procedures for determining Project Area (where applicable)**
- **Step 6: Define procedures for estimating abatement**
- **Step 7: Outline processes for data collection, monitoring and reporting**

# Methodologies

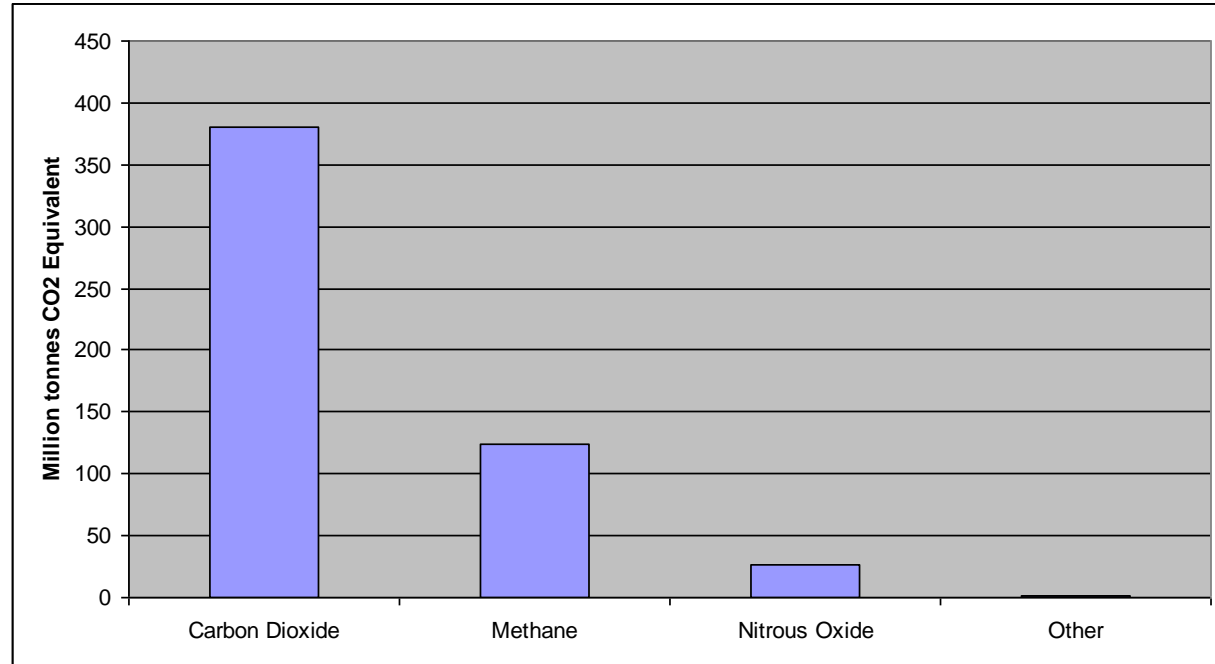


# Methane and Nitrous Oxide

- The other 2 greenhouse gases
- The biggest greenhouse gases in agriculture
- Methane ( $\text{CH}_4$ ) predominantly from ruminants
- Nitrous Oxide ( $\text{N}_2\text{O}$ ) from:
  - Nitrogen fertiliser
  - Ruminant excretion
  - Soil nitrogen cycle
- Need to be taken into account in any methodology

# Methane and Nitrous Oxide

- Agriculture = 60% of total methane emissions
- Agriculture = 85% of total NO<sub>2</sub> emissions



(UNFCCC 2006)

# Animals and Methane

- Reducing methane:

1. Reduce livestock numbers

- 80% of Central West catchment is grazed
- Land is not capable of cropping – what do we do?
- Reduction does not seem to be an option

# Animals and Methane

- Reducing methane:
  1. Reduce livestock numbers
  2. **Improve diet – better pastures**
    - Better quality pastures lead to better feed utilisation
    - Better feed utilisation = better production (kg produced per unit methane emitted)

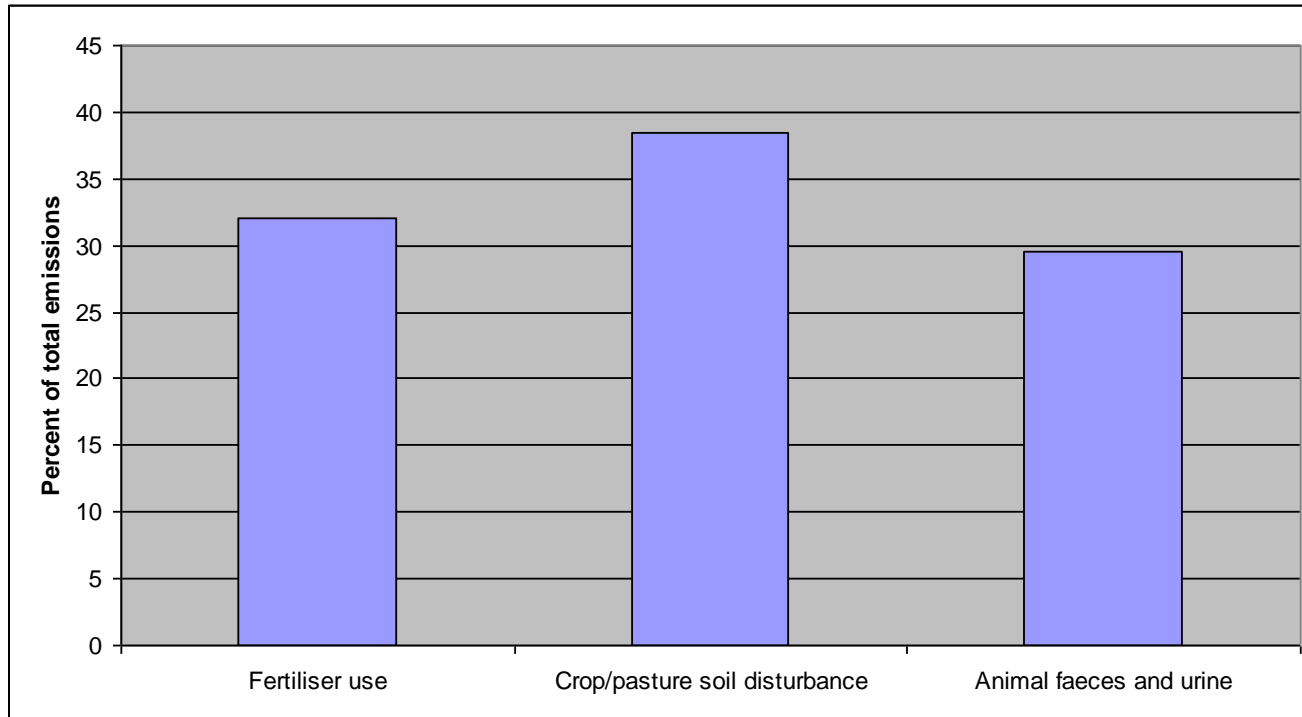
# Animals and Methane

- Reducing methane:
  1. Reduce livestock numbers
  2. Improve diet – better pastures
  3. **Chemical changes**
    - Vaccinations
    - Rumen modifications
    - Still have to get rid of the hydrogen

# Animals and Methane

- Reducing methane:
  1. Reduce livestock numbers
  2. Improve diet – better pastures
  3. Chemical changes
  4. **Breeding for improved residual feed intake**
    - grow at the same rate as inefficient cattle but eat less feed and produce less methane
    - Reduce methane production by 500 000t over the next 25 years just by improved RFI

# Nitrous Oxide



(Dalal et al 2003)

# Nitrogen Fertilisers and Nitrous Oxide

- Reducing nitrous oxide emissions
  - Good soil management will reduce waterlogging
  - Good nitrogen management will reduce nitrogen waste
  - Best N management practices can reduce N<sub>2</sub>O emissions by up to 80%
  - Best soil management practices may reduce even more?

# N<sub>2</sub>O emissions and livestock

- 75-80 % of nitrogen ingested is excreted
- Urine patches the equivalent of up to 1000kg N/ha
- Dicyandiamide (DCD) in New Zealand reduces pasture losses by up to 60%
- Balanced protein to energy ratios
- Increase water intake (add salt) to dilute the N content

# How important is my carbon plan?

- Wetlands?
- Endangered plants and animals?
- Applying soil ameliorants?
  
- You must comply with all other legislation
- A carbon plan does not exempt you from the law

■ Thank You

