



Primary Industries Climate Challenges Centre

# Carbon Farming Initiative Analysing the Implications

Richard Eckard



Primary Industries Climate Challenges Centre

A joint venture between the University of Melbourne and  
the Victorian Department of Primary Industries



THE UNIVERSITY OF  
MELBOURNE



State Government  
Department of  
Primary Industries

## Slide 1

---

r1

Structure the talk against each mitigation strategy

- Net emissions
- Emissions intensity
- What would be needed

Explain the scale of northern beef and P (100,000 ha) vs 100 ha dairy

Soil carbon – you have done your dash already

How CFI may work

- Aggregators
- No individual farmers
- Improving farm efficiency / animal numbers
- Reproduction, weaning percentages, fertility & health
- Feed quality
- High quality pasture
- Legumes
- Dietary supplements
- Grain
- Oils
- 1% fat = 3.5% decrease CH<sub>4</sub> /kg DMI
- Animal Breeding
- Feed conversion efficiency
- Reduced methanogenesis?
- Plant Breeding
- Improved ME: CP ratio
- Tannin, oils, sugars
- Longer-term
- Rumen manipulation
- Vaccination
- Biological control



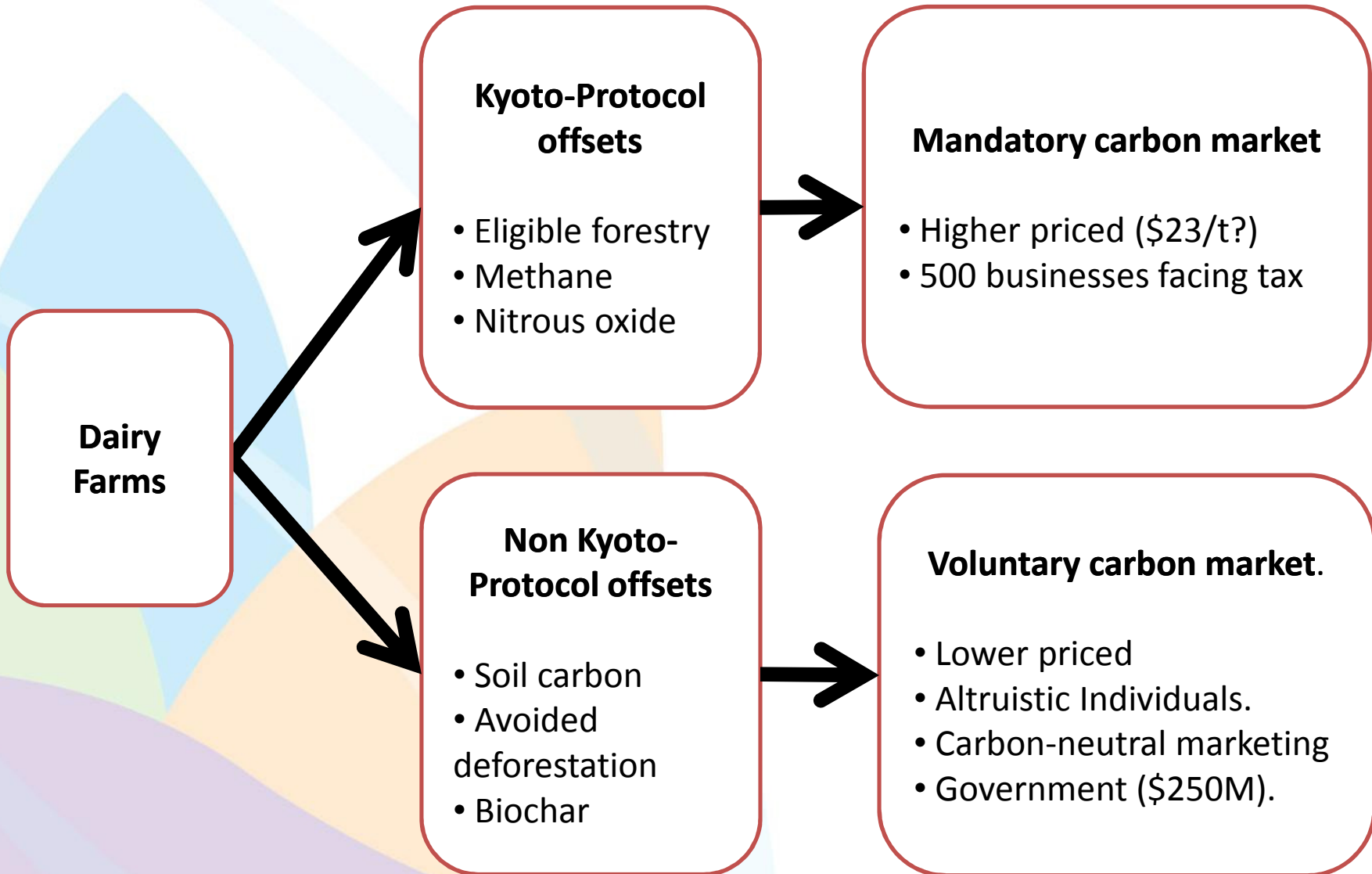
# The Carbon Farming Initiative

- Landholders can receive carbon credits for:
  - Reducing methane and nitrous oxide emissions.
  - Increasing the carbon stored in soils and vegetation.
- People and businesses can buy CFI credits to offset their emissions.
- Participation is voluntary.



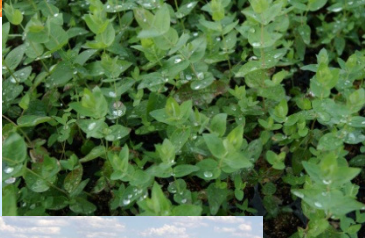


# Types of CFI offsets





# Some examples of eligible activities



## SEQUESTRATION

- Kyoto sinks
  - Reforestation
  - Revegetation
- Non-Kyoto sinks
  - Soil carbon
  - Biochar
  - Managed forests
  - Non-forest vegetation

## EMISSIONS REDUCTION

- Fertiliser management
- Manure management
- Livestock methane
- Landfill methane
- Savanna burning



# Integrity Standards

- **Additional** - Beyond standard industry practice
- **Permanent** – Carbon stored for 100 years
- **Avoidance of leakage** - No increased emissions elsewhere
- **Based on peer-reviewed science**
- **Measurable**
- **Conservative**
- **Internationally consistent**

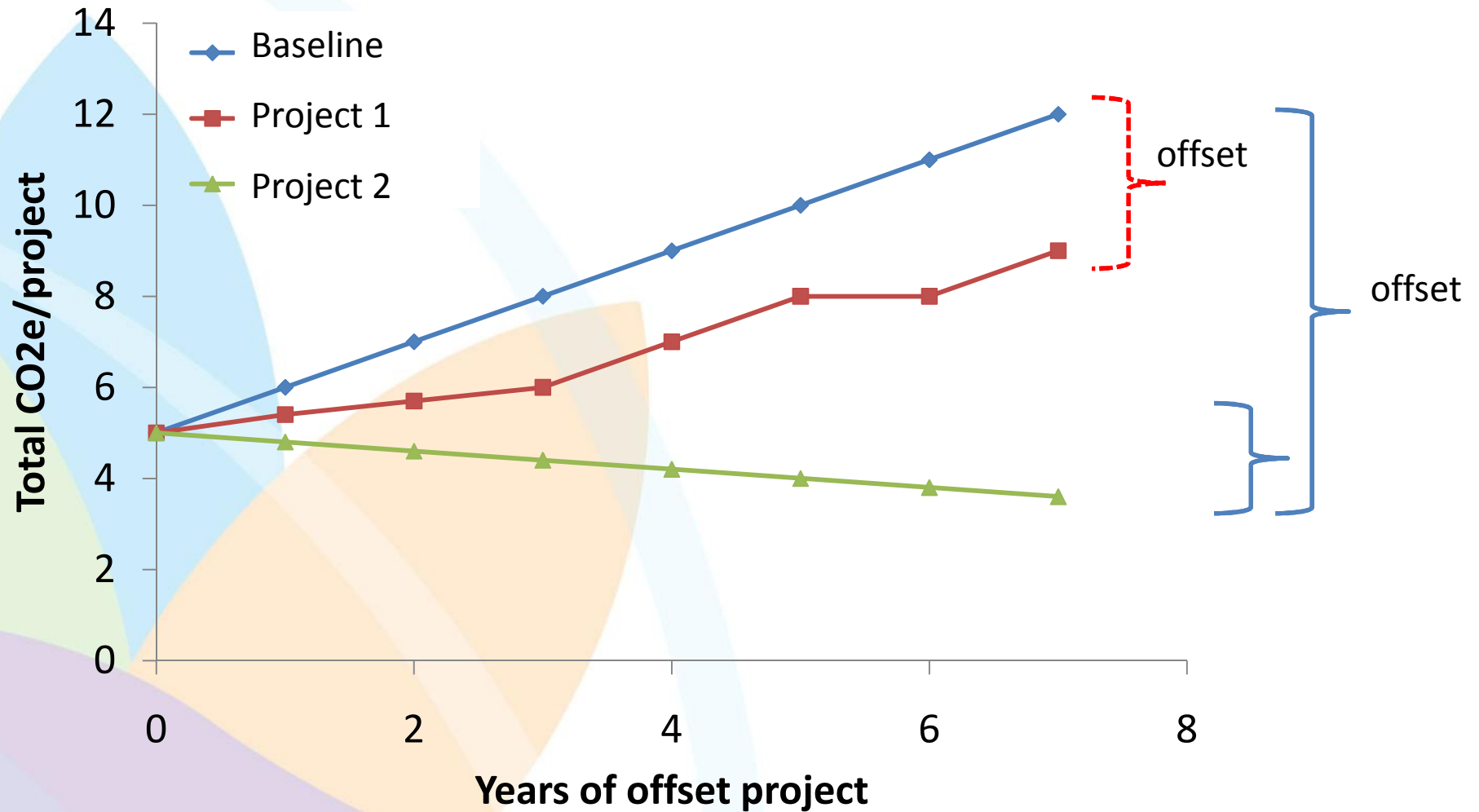


# What is in a methodology

- Rules and procedures for:
  - Determining baseline emissions
  - Estimating abatement relative to the baseline
  - Project monitoring
  - Project-specific record keeping and reporting



# Baseline and Project





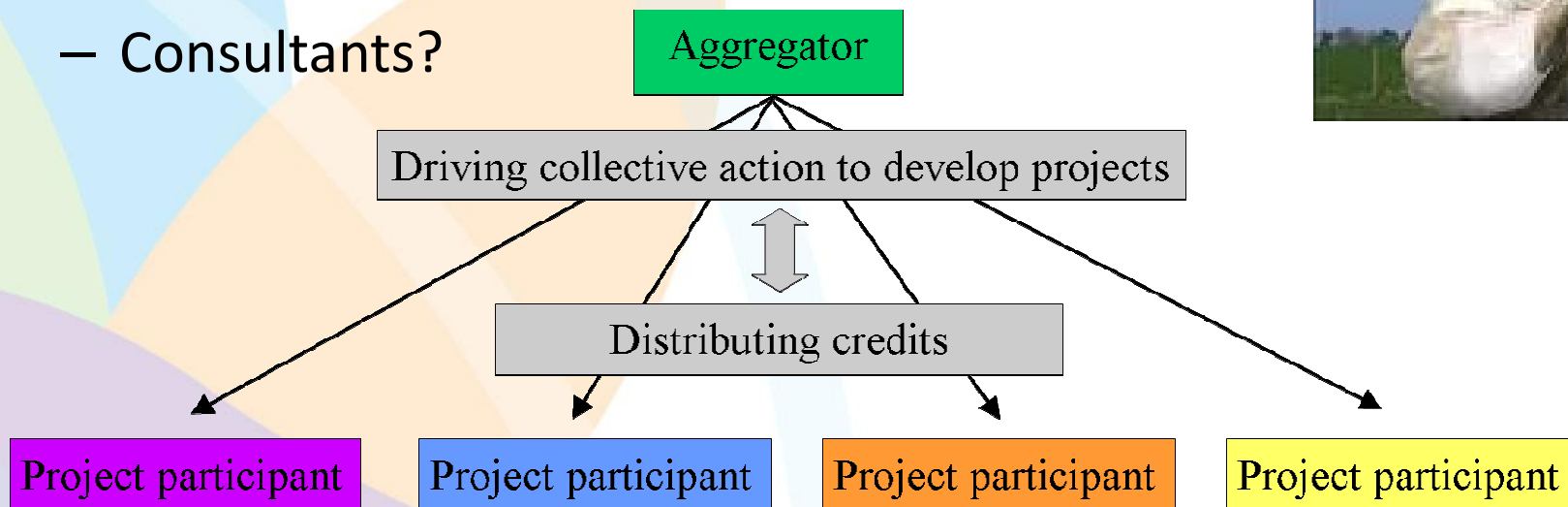
# Offset Methodologies

- Bottom up and top down development of methodologies
- Assessed by Domestic Offsets Integrity Committee (DOIC)
- Approved by Minister
- Publication of methodologies



# How CFI may work

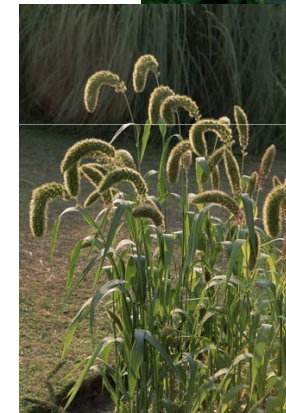
- Individual farmers?
  - Voluntary + Transaction costs high
  - Modest income - \$2 - \$12 per method/ha/y
- Aggregators
  - Pre-farm (Fertiliser Companies)
  - Post Farm (Processors)
  - Consultants?





# Options for abatement - Methane

- Feeding
  - Diet quality\*
  - Diet Supplements – Oils, Grape Marc
- Management
  - Animal numbers – Extended lactation
  - Improving efficiency\* - Health, fertility
- Animal and plant breeding
  - FCE/RFI\*
  - Less methane



\* Emissions Intensity measures

Eckard *et al.* 2010; Moate *et al.* 2010



# Options for abatement – N<sub>2</sub>O

- Nitrogen fertiliser
  - Rate, source, timing
  - Formulation
    - Inhibitors & slow release fertilisers
- Soil and water management
  - Compaction, irrigation, drainage
- Animal management (URINE)
  - Balancing ME:CP
  - Feeding inhibitors

**AGROTAIN**

**Green Urea**

ENTECC®



Dow AgroSciences  
**N-Serve**  
Nitrogen Stabilizer

**eco-n**  
nitrification inhibitor technology



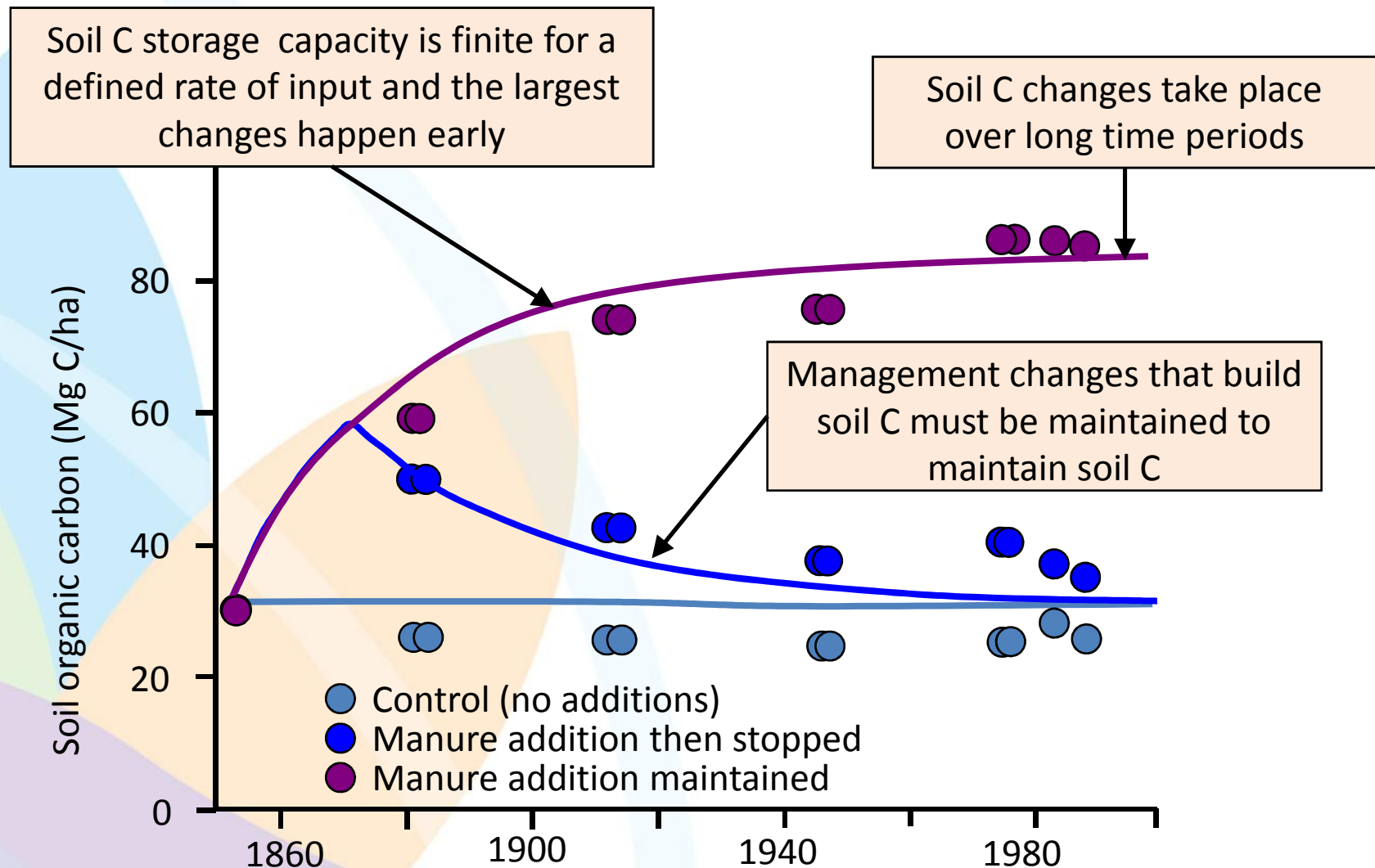
# Soil Carbon

- Building soil carbon is good practice
  - Healthy and productive soils
- Trading soil carbon is a separate issue
  - Modest price for 100 year obligations
- Most dairy soils have already built carbon
  - Not much room to increase further



# Management of soil carbon

## *Saturation and permanence*





# In Summary

- CFI is voluntary
  - No action is needed
  - Income likely to be modest
    - Unlikely to drive adoption alone
    - Processors may be better placed to manage
- Focus on profitability
  - Increased energy, C and N efficiency
    - Will reduce emissions intensity (less GHG/L milk)
- Industry better prepared to meet the policy and physical impacts of climate change.



Primary Industries Climate Challenges Centre

[www.PICCC.org.au](http://www.PICCC.org.au)

[www.greenhouse.unimelb.edu.au](http://www.greenhouse.unimelb.edu.au)



Primary Industries Climate Challenges Centre

A joint venture between the University of Melbourne and  
the Victorian Department of Primary Industries



THE UNIVERSITY OF  
MELBOURNE



Department of  
Primary Industries