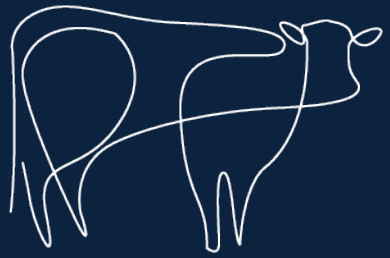
Dairy Australia



SADA Policy Forum

Charlie McElhone & Susannah Tymms

CLIMATE TARGETS

Australian Government
- 26-28% reduction by 2030 on 2005 levels
- Net zero by 2050 pledged

Fonterra
- 30% reduction by 2030 and net zero by 2050

Nestlé
- 50% reduction by 2030 and net zero by 2050

Unilever
- 50% reduction in GHG emissions for products by 2030 and net zero emissions for all products from source to point of sale by 2039

ADIC target:
30% reduction in emissions intensity, across both farm and manufacturing, by 2030 (relative to 2015 baseline)

International dairy sector declaration: Pathways to Dairy Net Zero
(commitment to action)

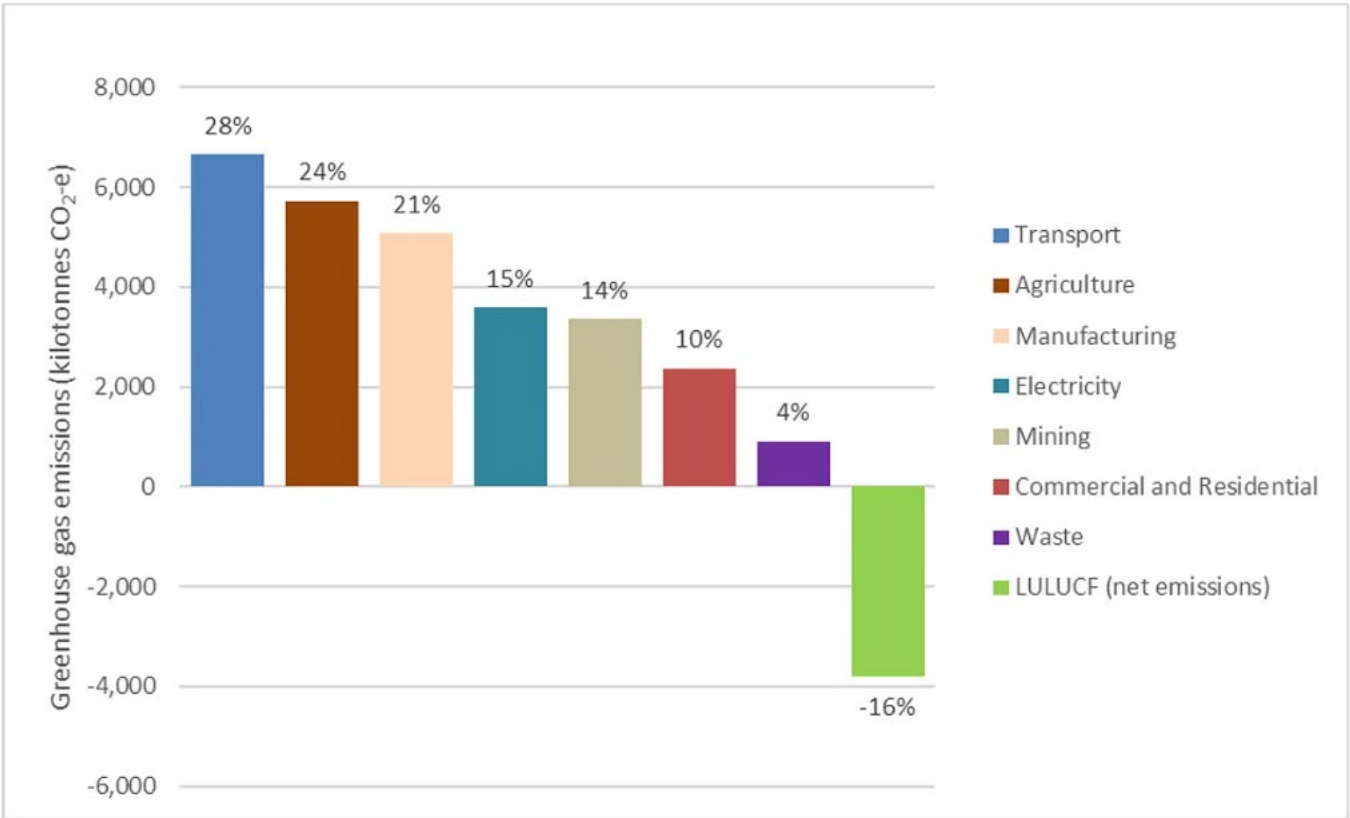


Figure 3: South Australia's greenhouse gas emissions in the 2019 financial year, by key economic sector. Source: Australian Greenhouse Emissions Information System, Department of Industry, Science, Energy and Resources.

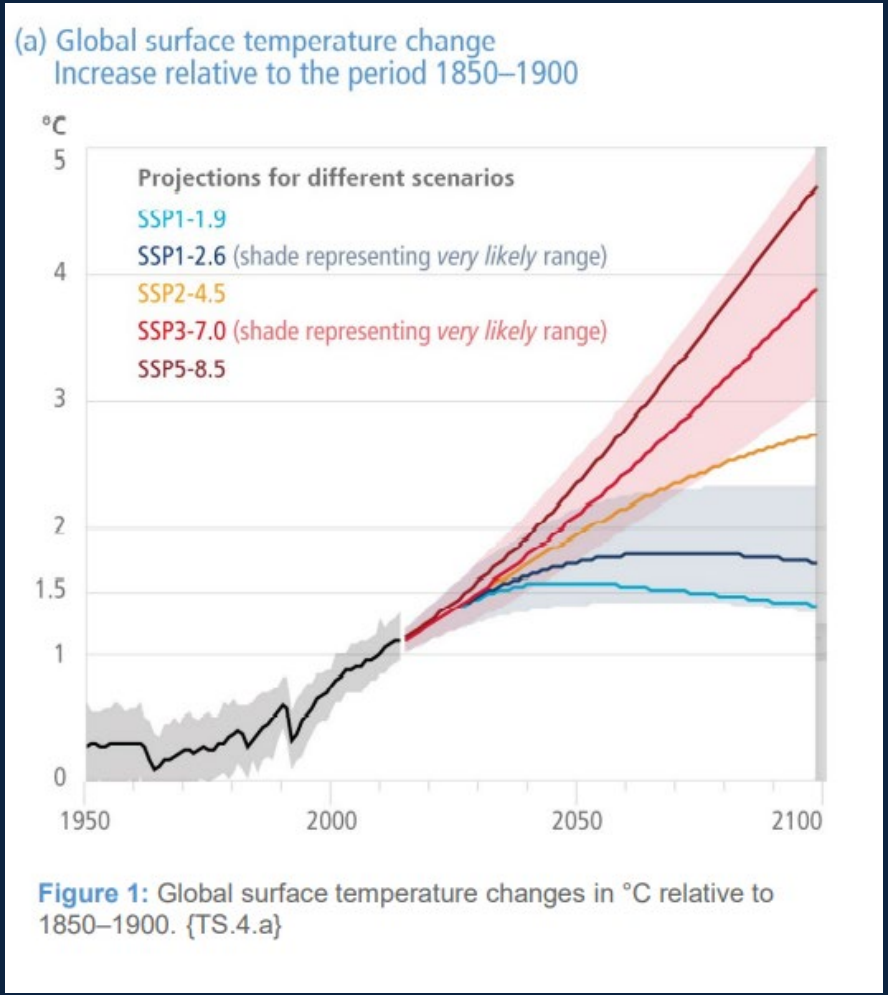
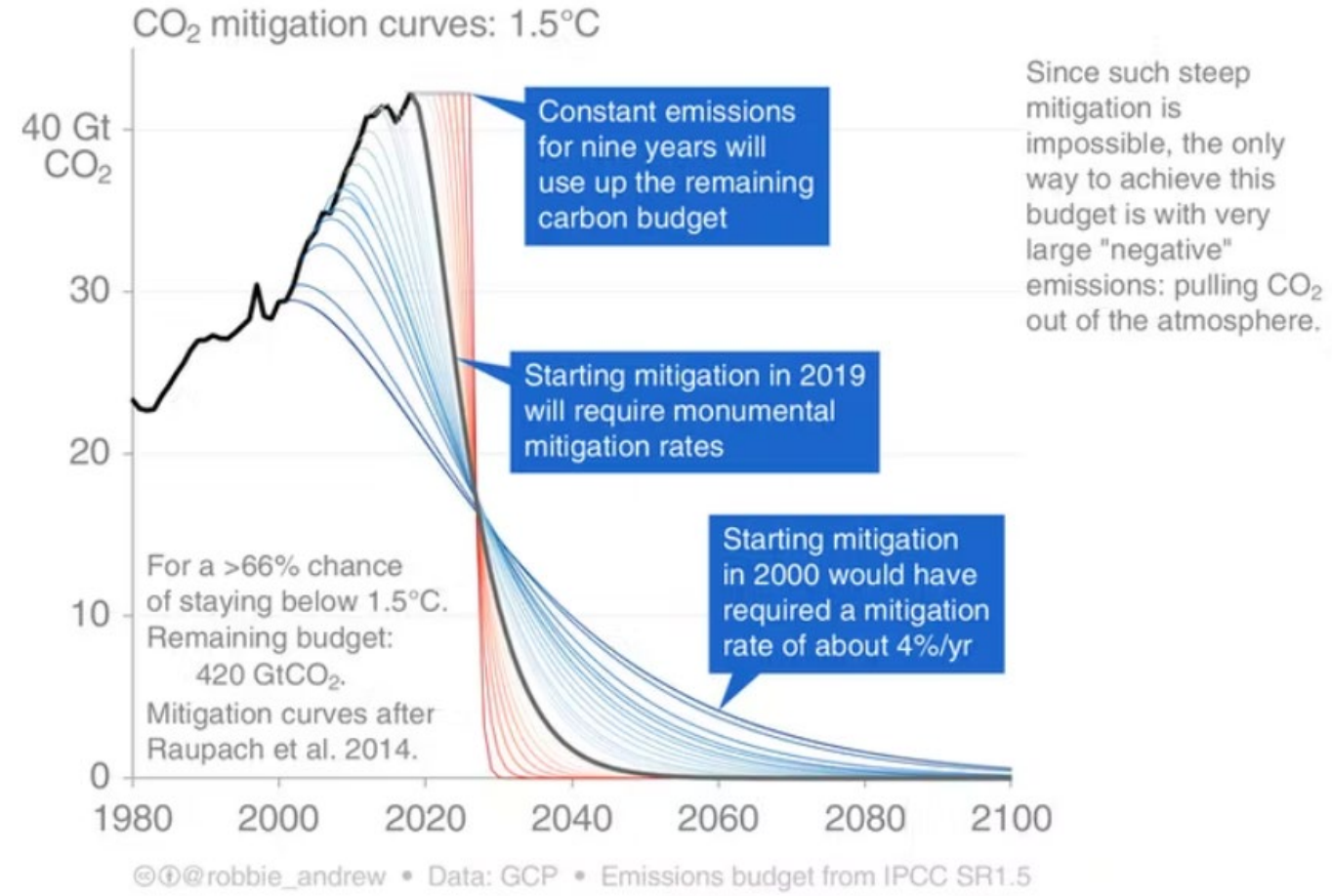


Figure 1: Global surface temperature changes in °C relative to 1850–1900. {TS.4.a}

INTERGOVERNMENTAL PANEL ON CLIMATE CHANGE SIXTH ASSESSMENT REPORT 2022

IPCC, 2022: SUMMARY FOR POLICYMAKERS [H.-O. PÖRTNER, D.C. ROBERTS, E.S. POLOCZANSKA, K. MINTENBECK, M. TIGNOR, A. ALEGRÍA, M. CRAIG, S. LANGSDORF, S. LÖSCHKE, V. MÖLLER, A. OKEM (EDS.)]. IN: *CLIMATE CHANGE 2022: IMPACTS, ADAPTATION, AND VULNERABILITY.* CONTRIBUTION OF WORKING GROUP II TO THE SIXTH ASSESSMENT REPORT OF THE INTERGOVERNMENTAL PANEL ON CLIMATE CHANGE [H.-O. PÖRTNER, D.C. ROBERTS, M. TIGNOR, E.S. POLOCZANSKA, K. MINTENBECK, A. ALEGRÍA, M. CRAIG, S. LANGSDORF, S. LÖSCHKE, V. MÖLLER, A. OKEM, B. RAMA (EDS.)]. CAMBRIDGE UNIVERSITY PRESS. IN PRESS.

SSP = an emissions scenario and likelihood of adaptation



Graph demonstrating how fast mitigation has to happen to keep to 1.5°C. © Robbie Andrew, CC BY

Dairy Australia

"Societal choices and actions implemented in the next decade determine the extent to which medium- and long-term pathways will deliver higher or lower climate resilient development (*high confidence*)."

IPCC Sixth Assessment Report 2022

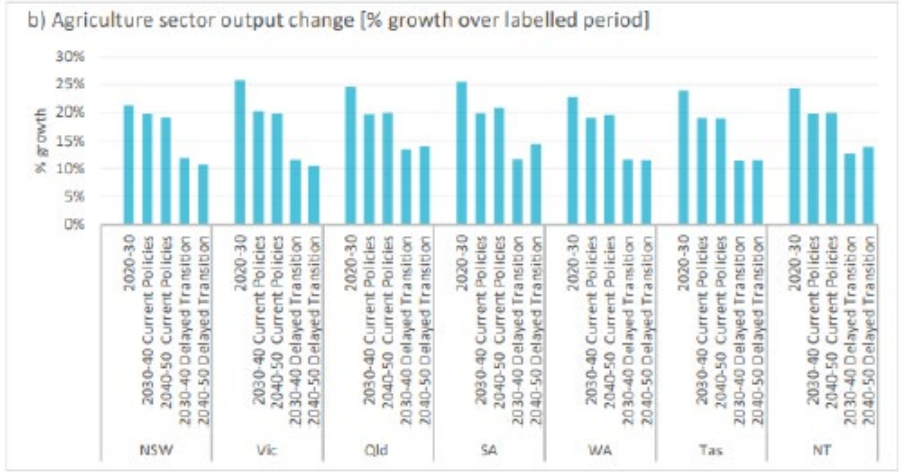
	Gippsland	Murray Dairy	WestVic	DairyTas	South Australia	NSW	SDP	Western Dairy
Temperature increase	1°-1.7°	1.2°-1.8°	1°-1.6°	0.5°-1.5°	1°-1.6°	1.2°-2°	1°-2°	1°-1.7°
Season of greatest warming	Summer	Summer	Summer	Summer/autumn	Summer	Summer	Spring	Summer
% decrease in rainfall (range)	-3% (-10% - +5%)	-3% (-10% - +5%)	-5% (-15% - +3%)	-5% (-15% - +0%)	-5% (-17% - +3%)	0%	-5%	-15% (-22% - -7%)
Variability of rainfall	Winter, Spring decrease	Winter, Spring decrease	Autumn, Winter, Spring decrease	Spring Summer decrease	Winter, Spring decrease	Little change	All seasons decrease (south)	All seasons decrease (esp Spring)
% time in drought (historical)	45% (33%)	46% (33%)	55% (38%)	53% (33%)	50% (40%)	38% (35%)	43% (35%)	62% (45%)
Soil moisture decline	-8% to -2%	-7% to -1%	-5% to -1%	-6% to -1%	-5% - 0%	-7% - -2%	-5% to -1%	-7% to 0%

CSIRO 2016: Climate change impacts on dairy farm regions out to 2040

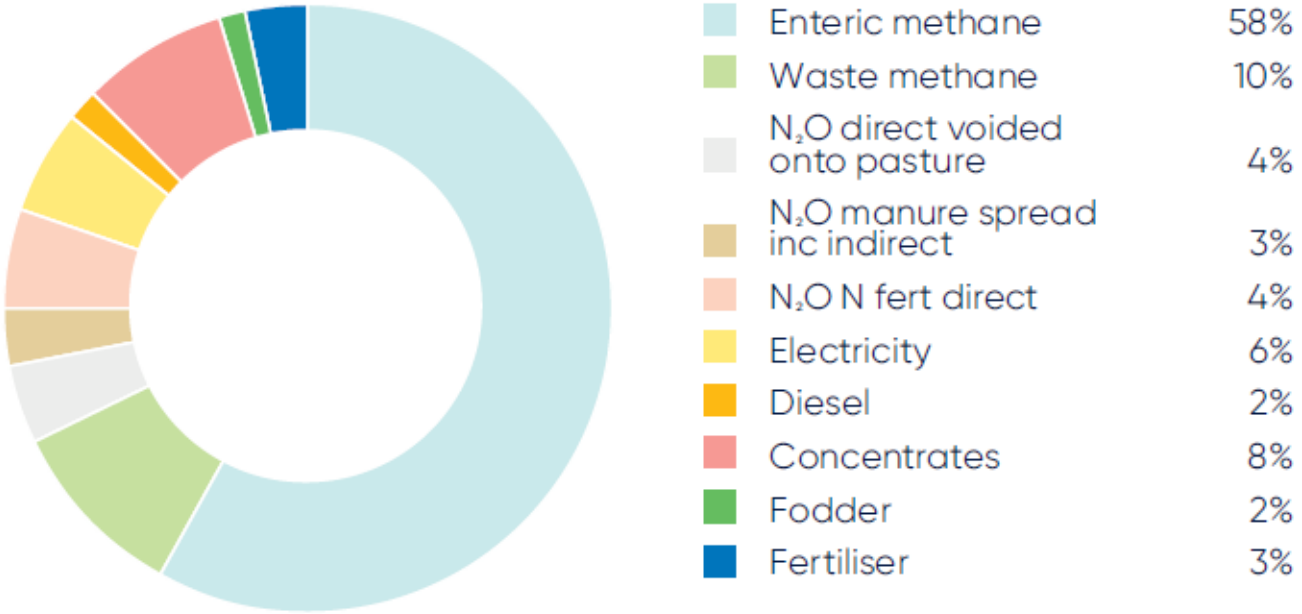
CLIMATE WILL CONTINUE TO DRAG PRODUCTIVITY

CSIRO report considered current policies and ‘delayed transition’ scenario and the implications for agriculture sector:

- Agriculture production will decline (10-15% difference)
- Impacts will vary across locations
- Increased demand combined with adaptation and resilience measures can mitigate economic impacts for crop and livestock production
- Note: Shifts in rainfall not included in analysis of chronic/acute impacts



Source: CSIRO 2022 Exploring climate risk in Australia
https://ecos.csiro.au/calculating-the-costs-of-net-zero-emissions/

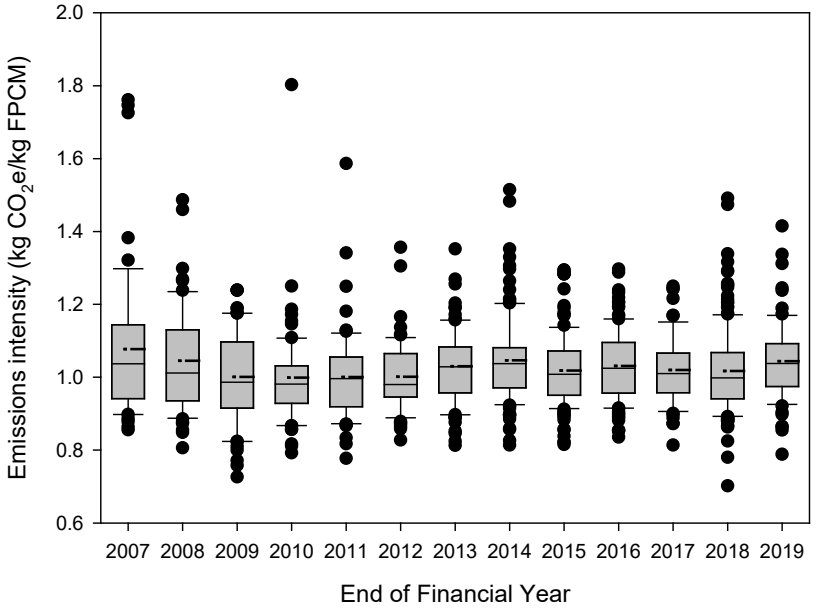


Source: Christie, K. 2020. Analysis of dairy farm greenhouse gas emissions data (DairyBase).

Measured emissions intensity change over time (Dairybase analysis)

Full dataset

Year	SE Vic	SW Vic	Nth Vic	Sth NSW	Nth NSW	SA	TAS	WA	Aus wide	No. farms
FY 2007	1.12	0.99	1.14						1.08	45
FY 2008	1.07	1.04	1.03						1.05	63
FY 2009	1.01	1.00	1.02						1.01	61
FY 2010	1.00	0.98	1.06						1.01	56
FY 2011	0.98	1.02	0.99						1.00	62
FY 2012	1.00	1.01	0.99						1.00	64
FY 2013	1.03	1.01	1.01	1.06	1.14	0.94			1.03	90
FY 2014	1.02	1.02	0.99	1.04	1.19	1.08	1.02	1.07	1.05	124
FY 2015	1.00	1.01	0.98	1.01	1.16	0.97	0.94	1.04	1.02	138
FY 2016	**1.03**	**1.02**	**0.99**	**1.01**	**1.13**			**1.01**	**1.03**	**124**
FY 2017	1.01	1.00	1.05						1.02	69
FY 2018	1.01	1.04	0.98	1.04	1.16	1.00	0.94	1.03	1.02	181
FY 2019	1.04	1.08	1.01						1.04	74
Average	1.02	1.02	1.02	1.03	1.16	1.00	0.97	1.04	1.03	1,149



MITIGATION - UNDERPINNING RESEARCH TO REDUCE ON-FARM EMISSIONS

- **Marginal Abatement Cost Curve** (roadmap for emissions reduction for the dairy industry; calculates cost of abatement over lifetime of measures: in development)
- **Update to carbon calculator and increase adoption** (to accumulate industry-level data for market assurance, government accounts and to better target on-farm management strategies)
- **Promote options to reduce emissions** (particularly those with productivity co-benefits)
- **Identify innovations in enteric methane research** (open call grant process)
- **Low-methane cows** (DairyBio animal breeding program)

DO NOW

- **Animal management** (health/fertility/heat stress/herd longevity)
- **Breeding** (genetic gain in plants/animals)
- **Supplements/diet manipulation** (oils/tannins e.g. grape marc)
- **Legumes** (Leucaena, Lucerne, Vetch, Lotus)
- **Good practice effluent, drainage, soil, and fertiliser management**
- **Energy efficiency and use of renewables**
- **Tree plantings, e.g. shelterbelts**
- **Supply chain expectations….**
  - Know your baseline (ADCC)

DO IN 5 YEARS

- **Vaccine**
- **Methane inhibitors** (seaweed, 3-NOP)
- **Early life programming**
- **Wearable devices?**
- **Further breeding innovations**

DAIRYBASE CARBON CALCULATOR

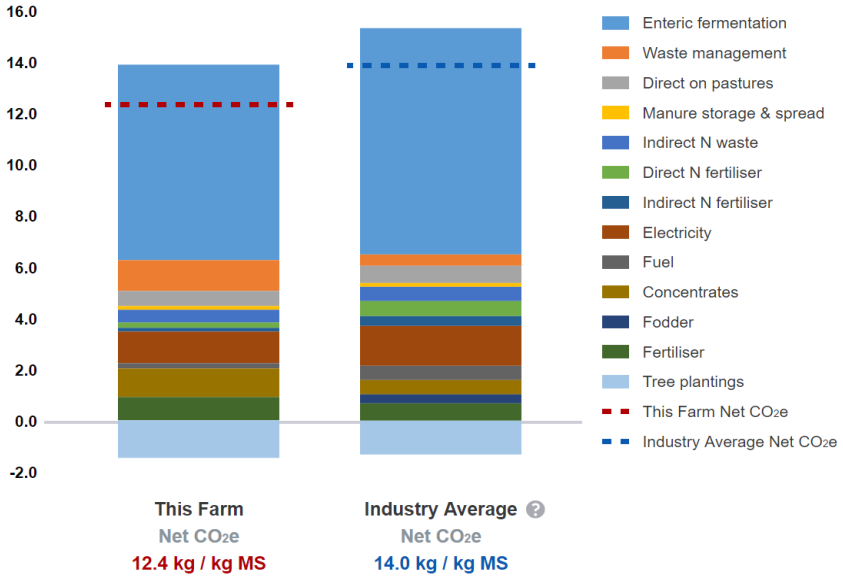
Inputs | Report | Strategy | Refresh data | Download Spreadsheet | Open in DairyBase

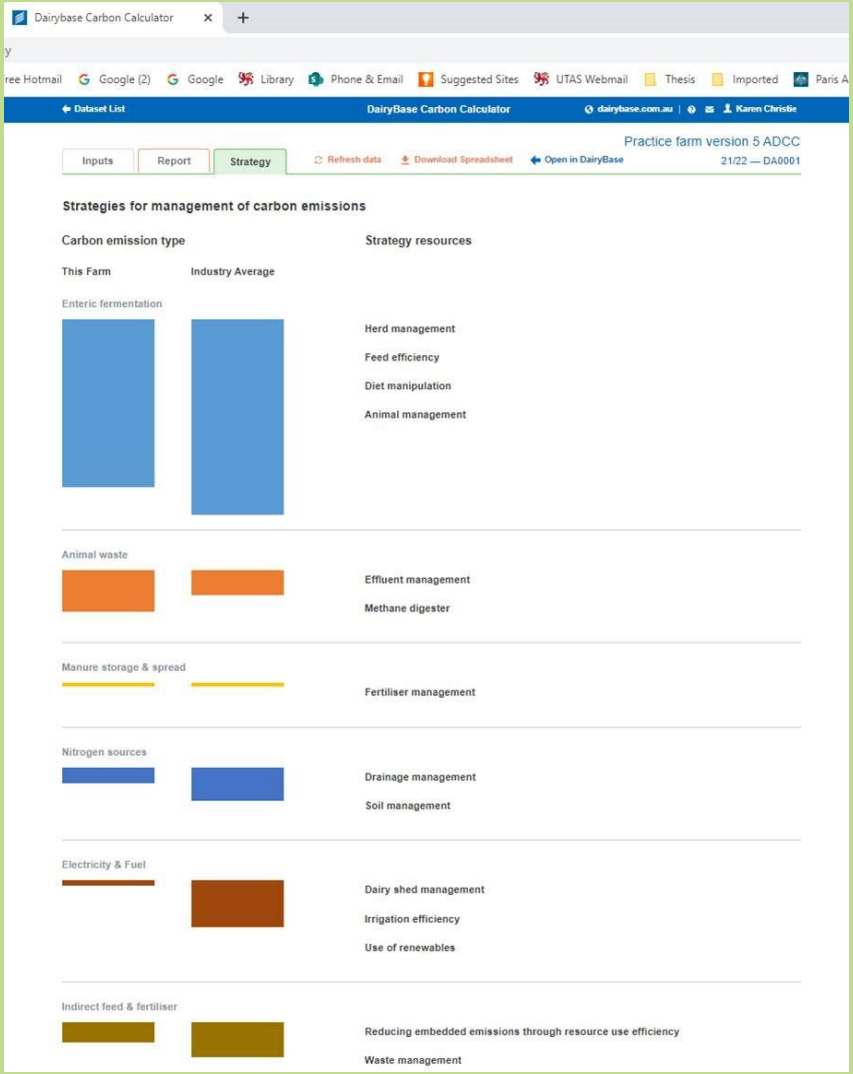
DBCC Comparison 1
16/17 — DA0001

Carbon Emissions Report

DairyBase Farm Id	DA0001
State	Victoria
DFMP Region	Gippsland
Financial Year	16/17
Dataset Name	DBCC Comparison 1
Description	

GHG emissions intensity	kg CO_2e / kg FPCM	0.89
	kg CO_2e / kg MS	12.4





- Strategy tab
- Breakdown of each source of emissions
- Comparing results to industry average
- List of strategy resources
- Hyperlinked to resources

close

Herd and breeding management can reduce enteric methane emissions and methane and nitrous oxide emissions from dung and urine. Strategies include:

- Extending herd longevity to reduce replacement rates.
- Identifying and culling less productive animals.
- Getting cows in calf, on time, every time.

Dairy Australia In Calf

Getting herd and breeding management right

Program logic behind the ***DA Climate Change RD&E Strategy 2020-25***

Dairy Australia

Practice areas	**Adaptation**	**Mitigation**	**Natural capital and climate risk**
Targets	**Profitable adaptation strategies to mitigate climate change**	**30% reduction in greenhouse gas emission intensity**	**Investment capital recognises the Australian dairy industry is successfully adapting to climate change**
Key investment priorities	• Understanding climate impacts vary for each region (*Dairy Businesses for Future Climates*) • Mitigating heat stress • Heat alert service & Cool Cows resources • Preparedness for extremes (*Forewarned is Forearmed - MCV*) • Genetic improvement of plants and animals (DairyBio)	• Profitable abatement strategies • Emissions intensity reporting – DairyBase Carbon Calculator uptake: Know Your Baseline • GWP* and international linkages • Level of ambition required by markets	• Market sustainability expectations • Sustainability guidelines relevant to Australian dairy systems • Sustainability reporting • Participation in carbon and biodiversity markets

Policy development considerations/opportunities

- Adaptation
  - On-farm measures to counter physical climate risk and bolster farm productivity

Key advocacy audience: governments, investors and banks

- Mitigation
  - Role of different GHGs e.g. methane
  - Ambition of ADIC target in Sustainability Framework
  - Driving uptake of footprinting/baseline numbers at farm level
  - Emissions reduction farm action plans
  - Participation in carbon markets

Key advocacy audience: markets, consumers, investors, banks and governments

How can DA support SADA policy development?

Key resources 2021/22:

- Marginal Abatement Cost Curve
- Australian Dairy Carbon Calculator
- Energetics adaptation scenario modelling
- Scientific consensus on methane (MLA)
- MJA Productivity study pointing to R&D
- BDO multipliers detailing economic contribution
- Carbon & Biodiversity Markets webinar