

Climate Change and Dairy

What do greenhouse gases do and what is dairy doing?

This fact sheet is part of the Profitable Dairying series - *Good business management reduces greenhouse gas emissions.*

Dairy farmers are impacted by a changing climate. Dairy farmers are already adapting farming practices to seasonal changes and increasing climate variability.

The Australian dairy industry also has a role in mitigating the impacts of climate change.

The Australian dairy industry has committed to reducing greenhouse gas emissions intensity (emissions per L milk produced) by 30% by 2020.

The greenhouse effect

Greenhouse gases (GHG) are gases in the earth's atmosphere that trap heat. They include water vapour, carbon dioxide, nitrous oxide and methane.

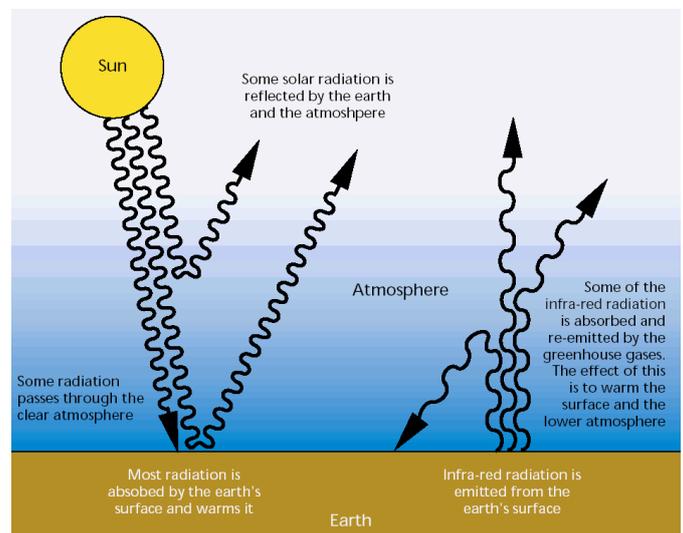
Greenhouse gases have a vital role in trapping heat from the sun to warm planet Earth. The greenhouse effect makes temperatures suitable for life on earth.

The greenhouse effect was discovered by Joseph Fourier in 1824, first reliably experimented

on by John Tyndall in 1858, and first reported quantitatively by Svante Arrhenius in 1896.

An easy analogy to understand the greenhouse effect is seen in winter - on clear nights, the sun's radiation is reflected out, temperatures are colder and frosts are more likely. On cloudy nights there is water vapour in the atmosphere and the sun's radiation from the day is retained, the atmosphere stays warmer and there won't be a frost.

Some greenhouse gases trap more heat than others *i.e.* they have a higher global warming potential.



The Greenhouse Effect (IPCC 1990)
[Click here for image attribution](#)



Global warming

Global warming is an enhanced greenhouse effect. Human activity is increasing levels of greenhouse gases in the atmosphere. More greenhouse gases are trapping more heat in the atmosphere.

So how does global warming cause climate change?

More greenhouse gases in the atmosphere are trapping more heat and warming our atmosphere and oceans. The oceans and ocean currents are the main drivers of our climate through a whole range of complex processes. Changes in our climate drivers result in changes in our climate. The Bureau of Meteorology State of the Climate Report 2014 states air and ocean temperatures across Australia are now, on average, almost a degree Celsius warmer than they were in 1910, with most of the warming occurring since 1950. This warming has seen Australia experiencing more warm weather and extreme heat, and fewer cool extremes. [Click here](#) for the State of the Climate Report 2014.

The challenge

The Australian Dairy industry accounts for 10% of agricultural greenhouse gas emissions, or about 2% of total national emissions. [Dairy Australia emissions data](#)

The global demand for dairy products is growing with a larger population and increased demand for protein in developing countries. In South Asia, the consumption of dairy products is expected to increase 125% by 2030. [FAO global dairy demand](#). Australia is a major dairy exporter - over 40% of our milk is exported. [Australian dairy export statistics](#)

The challenge is that the world needs more milk but producing milk generates greenhouse gas emissions - as does every human activity. The industry response to this challenge has been to focus on emissions intensity - the amount of emissions per L milk produced. The Australian dairy industry has set a national target to reduce greenhouse gas emissions intensity by 30% by 2020.

Achieving this target will take a combined effort from farmers, milk processors, researchers and industry extension networks. The essence of this target is "more with less". *Profitable Dairying in a Carbon Constrained Future* is a national project that is focused on helping progress this target on farm. It is being delivered in conjunction with a broad range of industry and government funded research initiatives to tackle emissions reduction across every facet of the dairy industry.

Australia has become the first country to ensure its entire dairy sector is compliant with Unilever's Sustainable Agriculture Code. Tackling greenhouse gas emissions will be important to maintaining this globally significant accreditation.

On farm

Today's farmers need to be more flexible and responsive to market and climate conditions than ever before. Change is constant. The Australian Government has funded Dairy Australia, and milk processors Bega, Fonterra and Murray Goulburn to work with farmers on practical ways to understand the implications of climate change and respond to the challenge of doing more with less.



"Doing more with less is farming. I think all dairy farmers want to use our resources efficiently. It's about constantly looking for better ways to do things to be more efficient and sharing that knowledge."

Jake Connor, farmer at Mt Compass, South Australia



"Over 90% of our suppliers have been involved in our Bega Cheese Environment Management System. We've been working with our suppliers around sustainability for many years so talking about practical ways to reduce emissions has been an easy progression as we now have the trust and support from our farmers."

Melissa Balas, Senior Environment & Sustainability Officer, Bega Cheese.

Dairy processing



Photo: Murray Goulburn

“Our brands depend on us following through in practical ways to help our farmer suppliers reduce their environmental footprint.”

Donna Gibson, Farmcare Team, Murray Goulburn.

According to tracking under the Australian Dairy Industry Sustainability Framework, the intensity of greenhouse gas (GHG) emissions generated by manufacturers' use of fuel and electricity in 2013/14 fell by 14.5% to 153.6 tonnes of CO₂ (equivalent) per ML milk processed. A 30% reduction in GHG emissions intensity from the baseline figure of 178.7 tonnes of CO₂ (equivalent) per ML milk processed in 2010/11 has been set for 2020. [Click here for information on the Australian Dairy Industry Sustainability Framework](#)

Industry research and extension

Dairy Australia, together with a broad range of funding partners, is investing in research to reduce greenhouse gases on farm and extend the key messages around good farming practices reducing emissions intensity.



“We have learned so much in this space, and our farmers are already some of the most efficient in the world. What we do from now on has to be really smart, but there are some promising technologies emerging.”
Professor Richard Eckard, University of Melbourne



“My PhD research is looking at ways to reduce methane and nitrous oxide emissions by managing effluent in different ways.”

Louise Murphy, PhD student, Tasmanian Institute of Agriculture

Further resources:

[Dairy Australia Climate Toolkit](#)
[Primary Industries Climate Challenges Centre](#)
[Emissions management for dairy farmers](#)
[Fert\\$mart best practice nutrient management](#)

Published by Dairy Australia Limited with support from the Australian Government.

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Dairy Australia Limited ABN 60 105 227 987
Level 5, IBM Centre
60 City Road, Southbank VIC 3006 Australia
T + 61 3 9694 3777 F + 61 3 9694 3701
E enquiries@dairyaustralia.com.au
dairyaustralia.com.au

