

# The Australian chicken meat industry's carbon footprint



Carbon footprinting is an analysis system based on 'lifecycle assessment' (LCA) and is a systematic approach used to evaluate the level of greenhouse gas emissions (GHG) of a product, process, or activity throughout its entire lifecycle, from raw material extraction to disposal or end-of-life.

Although producing a product may generate many GHGs, all gases are standardised based on their global warming potential and are reported based on their carbon dioxide equivalent warming potential.

A product's carbon footprint is reported as 'impact per kilogram of product', which allows for more accurate benchmarking and comparison with other products and is commonly referred to as an 'emission intensity' (reported as carbon dioxide equivalent emissions per kg; CO<sub>2</sub>-e/kg). This is different to 'total emissions', which is an absolute measure of the overall emissions generated from a process to create a product.

As part of an LCA, emissions are categorised as either:

- Scope 1: Direct GHG emissions that occur from sources owned or controlled by the company. For example, emissions from manure, farm or processing operations, diesel usage.
- Scope 2: GHG emissions from the generation of electricity that is purchased by a company, such as the production of electricity by power plants that is delivered to consumers on the electricity grid.
- Scope 3: GHG emissions that occur as a result of a company's activities but are not directly owned or controlled by that company. They can be upstream, such as the production of purchased feed and manufacture of chemicals, or downstream, such as transportation and distribution of chicken meat.

An LCA was completed for the Australian chicken meat industry utilising data and information from 2020 and compared to the industry's LCA completed in 2010 to determine if, and where, changes to GHG emissions had occurred over that decade.

## The carbon footprint is lower for conventional chicken meat production compared to free range

In 2020, the carbon footprint of chicken meat was 3.8 kg CO<sub>2</sub>-e/kg for conventional production and 4.0 kg CO<sub>2</sub>-e/kg for free-range production (Figure 1).

Higher GHG emissions for free-range were due to higher rates of inclusion of imported soybean meal in their feed and slightly poorer feed conversion ratios (FCR; the amount of feed required to produce the same amount of meat) than recorded for conventional chicken meat production. Feed production was the largest contributor to the supply chain for GHG emissions, with impacts ranging from 77–79%. GHG emissions from farming were 9–12%, with the majority attributable to fossil energy consumption and a smaller portion from manure. In free-range production, emissions from manure were higher than in conventional production.

Meat processing contributed 7–8% and breeding and hatchery operations accounted for approximately 4% of emissions.



Image courtesy Australian Chicken Meat Federation

This fact sheet was developed as part of the *Training and extension for the Australian chicken meat industry* project (PRJ-011920). This project supports the adoption of innovation and research and development outcomes for the Australian chicken meat industry.



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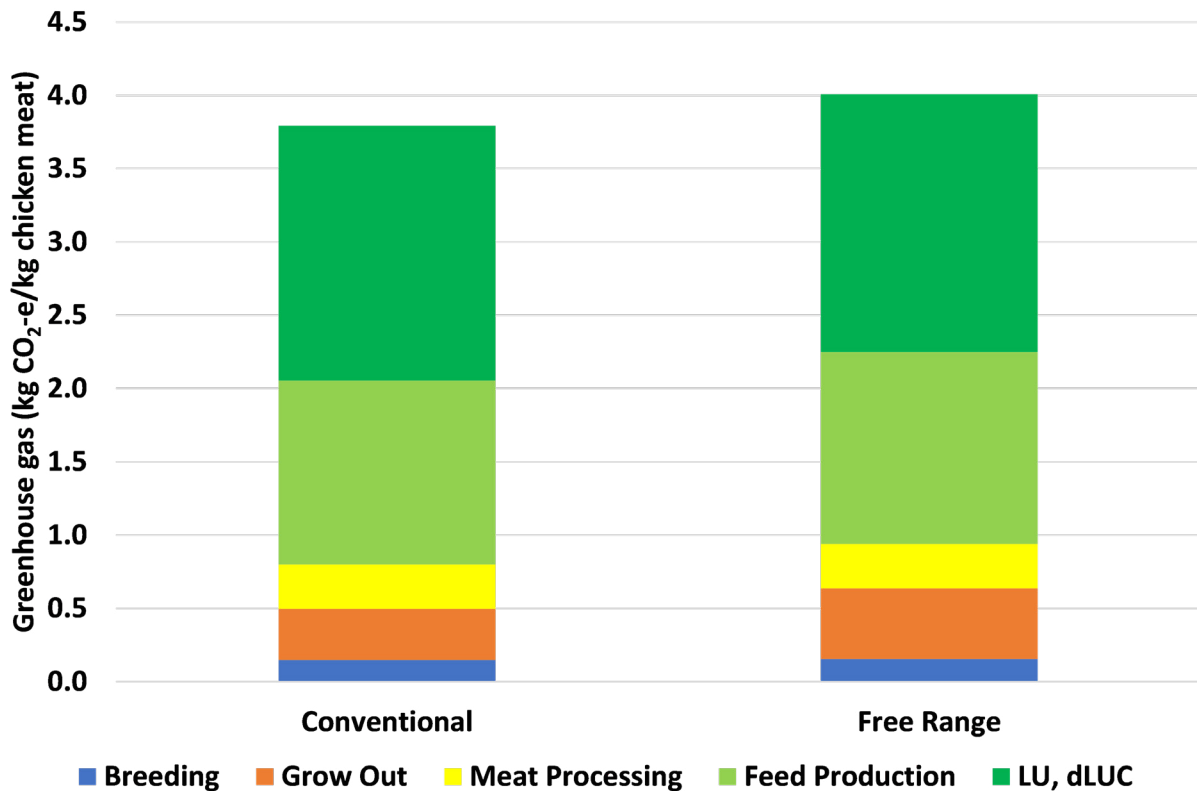


Figure 1. GHG emissions, including Land use (LU) and direct land use change (dLUC), for Australian conventional and free-range chicken meat production.



Image courtesy Australian Chicken Meat Federation

### Carbon footprint has increased since 2010 predominately due to changes in feed source

Compared with the emission intensity reported for the 2010 Australian chicken meat LCA, scope 3 emissions were much higher and therefore, resulted in a higher carbon footprint in 2020. In 2010, soybean meal was imported from South America and the USA, however in 2020, almost all soybean meal was sourced from South America, which was associated with higher GHG emissions from land use (LU) and direct land use change (dLUC). Scope 3 emissions (incl. LU and dLUC) were approximately 89% of the total emissions in 2020. Scope 1 and 2 emissions represented approximately 11% of the total (Figure 2).

Considering the timeframe to implement changes, careful consideration is required by industry and individual companies before committing to emissions reduction targets. Exploration of opportunities to market products at a higher value in return for better environmental performance should be a key focus, coupled with effort to identify feed sources that have a lower GHG emission intensity.

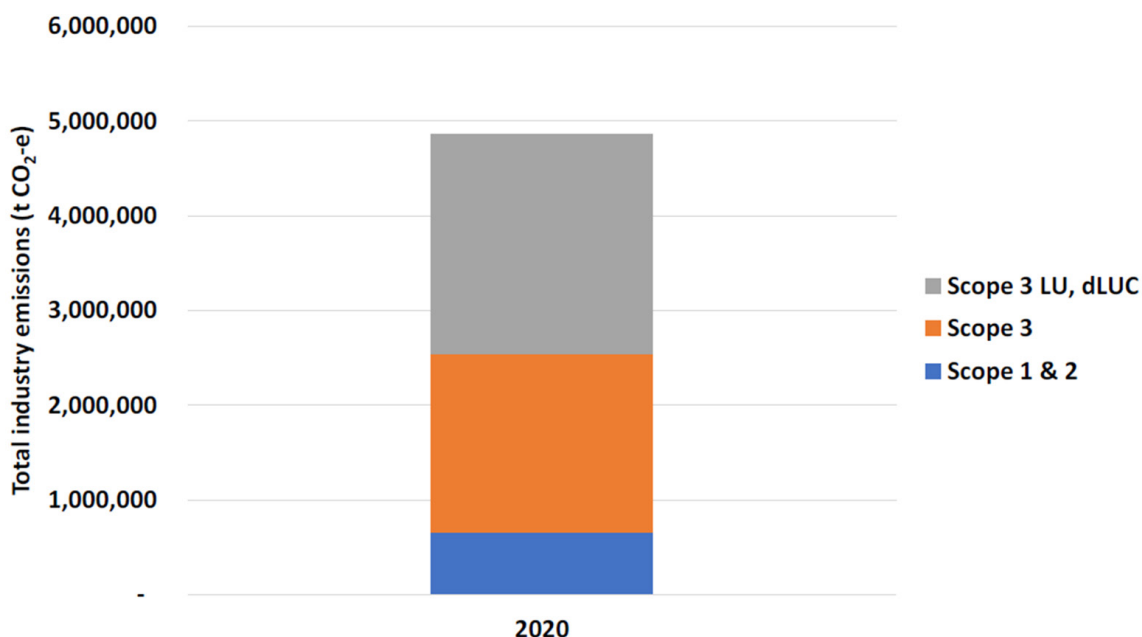


Figure 2. Total emissions, reported by scope and inclusive of LU and dLUC for the Australian chicken meat industry.

### More information

Read the journal article

- Resource use and environmental impacts from Australian chicken meat production  
DOI <https://doi.org/10.1016/j.jclepro.2016.06.086>

Watch the webinar

- [Pathways to reduce carbon footprint in meat chicken farming](#)

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