Australian Government
Department of Industry, Innovation and Science
Business Cooperative Research Centres Programme
Pork CRC
CRC for High Integrity Australian Pork

Project Number & Title **4C-121: The low emission future of pork**

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Aims and Objectives

The project aimed to determine the greenhouse gas emissions (carbon footprint, CF) from the expanding pork production using the best technology for low CF emissions, demonstrating improvements achieved by the industry and the pork CRC for the year 2015 and projected to the year 2020.

Objectives:

1. To quantify the CF impacts from marginal suppliers of Australian pork.
2. To provide LCA data on Australian marginal suppliers and demonstrate an application of consequential LCA modelling.
3. To assess CF emission trends of marginal suppliers in 2015/16 and projections of the CF emission impacts from the pork industry in 2020/21.

Key Findings

This study revealed that future marginal Australian pork production generated substantially lower CF impacts across three scenarios, compared to previous benchmarks for average Australian pork. Excluding land use change (LUC), the impacts approached the CF of average Australian chicken meat. In the present study, significant improvements were observed in herd performance compared to the industry average in 2010. When combined with changes in the proportion of different housing types and the increase in use of biogas, this resulted in 44% lower impacts for marginal pork production in 2015/16 and 63% for 2020/21 compared to the average benchmark (2010), excluding LUC. These results showed substantial progress towards the goal to reduce the CF of Australian pork to 1.0 kg CO_2-e kg LW^{-1}.

Key factors contributing to the substantial improvement in CF for projected, future Australian pork is the change in herd performance and manure management system. Biogas production was found to be a common feature of the larger, new conventional piggery developments. The cost effectiveness of biogas installation is supported by the market for Australian Carbon Credit Units (ACCUs), which provides a revenue stream from gas used to generate electricity, and excess, flared gas. This has substantially improved the cost-effectiveness of biogas installation in Australia and is a key policy feature assisting the industry transition to lower emissions in the future.

Application to Industry

The authors investigated several mitigation strategies the industry could use to further reduce the environmental burden associated pork production, including: optimised biogas, optimised diets and increased turnoff weight.

The increase in the use of manure for energy production by means of biogas generation could significantly reduce the CF and environmental impacts of pork production. Additionally, the use of pig feed formulated from crops with lower cultivation impacts, and local production of the feed components could significantly reduce the environmental impacts of Australia pork production. Interestingly, an increase in turnoff weight would allow the industry to expand with the low environmental impacts. A mixture of these strategies could be applied to the pork industry to reduce GHG emissions even further and potentially achieve the Pork CRC target to reduce the CF of Australian pork to 1.0 kg CO_2-e kg LW^{-1}.