Snapshot Report

Snapshot

Environmental Performance Review – Red Meat Processing Sector 2022

Project Code
2023-1002

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Project Description

Red meat processing is a major Australian industry, employing around 35,000 people, predominantly in rural and regional areas, and is the largest Australian food exporting sector. Continual improvement in resource use efficiency and environmental sustainability are priorities under the industry's Red Meat 2030 strategy. Energy and water use efficiency also impact on production costs, profitability and competitiveness. In addition, the industry is seeking to meet community expectations in terms of climate action, the protection of water quality, and local amenity.

This project continues the series of Environmental Performance Reviews of the Australian red meat processing industry that began more than 20 years ago, presenting results for the financial year ending June 30, 2022.

This report differs from previous Environmental Performance Reviews in that some results are calculated separately for beef cattle and for sheep. This is to meet the reporting requirements of the Australian Beef and Australian Sheep Sustainability Frameworks. Also, this Environmental Performance Review was undertaken only 2 years since the last review in 2020, in line with the industry's commitment to biennial reporting of environmental performance.

The project objectives included assessing environmental performance and evaluating critical variables, such as size of operation, and the adoption of environmental performance targets.

Project Content

The methods used to undertake the Environmental Performance Review involved AMPC contacting red meat processing facilities and inviting their voluntary involvement. Participating sites were sent a Microsoft Excel-based survey instrument. Completion of the survey instrument was supported by telephone and email discussions. Throughout the data collection process, data quality assessment took place, unusual data entries were explored, and additional qualitative information was gathered to aid interpretation as needed. While all red meat processing facilities share common features, they also have their own unique characteristics.

The environmental aspects studied included water use, water quality, energy use, GHG emissions, waste to landfill, and the protection of local amenity (odour and noise control).

In total, 31 sites were included in this review (Fig.1), representing the highest level of participation to date, and indicative of increasing levels of commitment to sustainability by the industry. These sites represented almost 60% of national production, they were located across Australia, and ranged greatly in production output (Table 1). Although the sample was skewed toward larger processors, there was no evidence that facility size had a significant bearing on environmental performance. As such, the results presented in this report are considered representative of the industry overall.

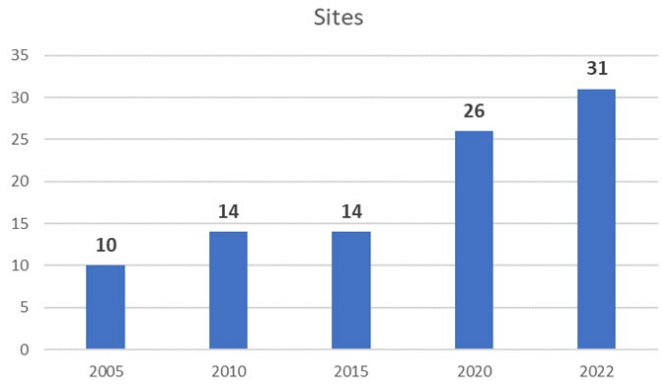

Figure 1: Sites participating in the AMPC Environmental Performance Review

Table 1: The diverse characteristics of sites included in the sample

Parameter	Range
Production	From 5,500 to 120,000 t HSCW
Animal mix	Beef cattle (19), Lamb[1] (7), Mixed (5)
Location	NSW (7), QLD (8), SA (3), TAS (2), VIC (6), WA (5)
Operations	Rendering (25), Without rendering (6)

[1] Some sites also processed goats and other small animals

Another overarching factor was the lower levels of output by the red meat processing industry during the 2021/22 financial year. Overall, red meat industry processing was more than 16% lower than 2 years previously. While processing of mutton and lamb was marginally lower, processing of beef cattle was more than 20% lower. Difficulties in the operating environment, including people shortages, challenges in livestock supply, and disruptions to export supply chain logistics were likely all factors. Processing plants are typically the most resource use efficient when operating at full capacity, so the 2022 Environmental Performance Review results need to be interpretated in this context.

Project Outcome

Compared to the previous review in 2020, there was improvement in some indicators, other indicators showed little change, and a few regressed (Table 2).

Table 2: Summary of Environmental Performance indicators

Indicator	2010	2015	2020	2022
Water intake (kL/t HSCW)	9.4	8.6	7.9	8.0
Water demand met by recycling (%)	11	13	11	12
Untreated wastewater (mg/L)				
Phosphorus	42	33	30	36
Nitrogen	233	250	175	169
Biological oxygen demand	3707	2657	2257	2171
Fats, oils and grease	1593	1780	1143	1256
Nutrients discharged to rivers (mg/L)				
Phosphorus		28	44	18
Nitrogen		47	99	31
Energy use (MJ/t HSCW)	4108	3005	3316	3435
Energy demand met by biogas (%)			5.8	7.7
GHG emissions (kg CO_2e/t HSCW)	554	432	397	447
Waste to landfill (kg/t HSCW)	11.3	5.9	11.9	17.3
Local amenity				
Odour complaints (no/site/year)	8.9	7.1	3.8	1.7
Noise complaints (no/site/year)	<1	<1	<1	<0.1

- Water demand was 8.0 kL/t HSCW, a level very similar to 2020. However, differences were observed between beef (8.3 kL/t HSCW) and sheep (7.2 kL/t HSCW). This may have been a consequence of beef cattle processors operating substantially below capacity during the 2021/2022 financial year.
- Wastewater quality indicators were mostly lower, and particularly so in the case of discharge to the aquatic environment where levels of phosphorus (P) and nitrogen (N) averaged 18 and 31 mg/L, respectively.
- Energy use intensity was marginally higher than in 2020 at 3435 MJ/t HSCW, and only a small difference between processors of beef cattle (3420 MJ/t HSCW) and sheep (3477 MJ/t HSCW) was evident. Previously, it has been reported that beef processing requires substantially less energy per t HSCW than sheep. As such, the results obtained in 2022 point again to inefficiencies related to lower production by beef processors in the past financial year. The trend toward greater value adding and the consolidation of operations on site that may have previously been undertaken by other separate businesses is also relevant. The contribution of biogas to total energy demand increased to 7.7%, consistent with the increasing uptake of covered anaerobic lagoons for wastewater treatment (10.5% in the case of beef processors).
- GHG emissions were 447 kg CO_2e/t HSCW, higher than in 2020 and more like the level reported in 2015, with beef processors reporting substantially higher emissions compared to sheep processors (476 kg CO_2e/t HSCW compared to 364 kg CO_2e/t HSCW). Again, this is contrary to expectations as it has previously been reported that GHG emissions related to beef processing are ordinarily lower per t HSCW than for sheep. Once more, the inefficiencies related to lower production by beef processors in the past financial year appear to have contributed.
- Waste sent to landfill was 17.3 kg/t HSCW, a level higher than in 2022. The reasons for this are unclear. Potentially, this has to do with variable approaches to quantifying waste over time and between sites.
- Local amenity indicators both showed further improvement compared to 2020, with noise complaints more than halving to an average of 1.7 per site per year, and odour complaints being very uncommon at less than 0.1 per site per year.

Further information and analysis are available in the project Final Report.

Benefit for Industry

Individual sites have their own unique characteristics meaning that priorities for environmental improvement need to be determined at the local site level. Nevertheless, large variation in environmental indicator results were evident across sites, suggesting that there remains ample opportunity for further gains across the industry.

For some indicators, sites that had set targets were observed to have marginally better environmental performance, suggesting value in target setting as a first step that leads to environmental improvement.

Environmental performance results tended to be more variable among smaller sites, and these sites could be a focus for programs aiming to support environmental improvement in the industry.

For individual processors, these results can be beneficial for benchmarking site performance. As a statement of overall industry levels, they can also be used to build trust with communities and stakeholders by demonstrating commitment to transparency and ongoing environmental performance improvement.

Finally, the results can inform strategic research investment and the development of environmental management tools and resources.