

Final report

Contribution of Livestock Exports to International Development Goals

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Abstract

This project aimed to quantify and communicate the international contributions and benefits of the livestock export industry towards international sustainability and development goals and frameworks.

Four destination markets were selected for enquiry, namely feeder cattle to Indonesia, slaughter cattle to Vietnam, slaughter sheep to Kuwait, and dairy cattle to China. A scoping study was completed of sustainable development frameworks to select themes and indicators that are relevant to the livestock export industry and that can be clearly linked, in most instances, to the United Nations Sustainable Development Goals (UN SDGs).

Qualitative and quantitative data was sought to match these themes and indicators from a variety of sources including government and industry reports, communication with the Livestock Export Program (LEP) in-market managers, academic articles and statistical databases. While this produced valuable insights, some measures are only indicative due to limitations in the available data. In several cases, despite efforts to capture contributions, the complexity of tracing outcomes across markets meant that not all indicators could be fully assessed.

The livestock export market performs strongly in its contribution to sustainable development of recipient nations under the themes of economic development; capacity building; food security, health and nutrition; animal health and welfare; waste reduction and responsible production and consumption; and partnerships for international development, although not all themes were relevant for all four countries.

Looking ahead, the report emphasises the need to continue and expand data collection. Establishing a baseline and refining the methodology provides a foundation for supporting ongoing project adoption, strengthening communication with stakeholders, and ensuring the industry can more comprehensively demonstrate its contribution to both Australia and its international partners.

Executive summary

Background

The purpose of this project was to quantify and communicate the contributions of the Australian livestock export industry against sustainable development frameworks and therefore help to communicate the positive impact of the trade. This information will support the industry's community sentiment research, *State of the Industry* report, and the Australian beef and sheep sustainability frameworks. The information gained will also provide examples of the positive contribution of the trade to the development of international trading partners. These examples are relevant for industry stakeholders in the community, government, financial, and international trading sectors.

Objectives

The objectives of the project were to:

- Identify the quantitative and qualitative data available to detail the international impact and benefits of the Australian livestock export industry towards the UN SDGs and other relevant domestic and international sustainability/environment, social and governance (ESG) principles and goals.
- Provide information to feed into the industry's broader community sentiment work, the *State of the Industry* report, and the Australian beef and sheep sustainability frameworks.
- Provide evidence of the positive contribution of the livestock export trade to the social, sustainable and environmental development of international trading partners for stakeholders, including the Australian community, agricultural sector, politicians and government officials, banks and financial institutions, and international trading partners.

Methodology

The majority of the industry's research, development, and extension (RD&E) activities are conducted through the LEP, a collaborative initiative jointly funded by LiveCorp and Meat & Livestock Australia (MLA), the marketing and research bodies for the livestock export industry and livestock producers respectively. LiveCorp oversees the management and administration of these RD&E projects.

As part of the initial project scoping, stakeholders from LiveCorp and the LEP RD&E and in-market programs were engaged to select four representative supply chains for in-depth analysis. This collaborative approach ensured that the project's methodology and focus areas were aligned with key industry priorities and practical realities.

A framework for data collection was developed that utilised the UN SDGs as well as other sustainability frameworks relevant to beef, sheep and dairy industries. These frameworks were chosen for their global coverage, industry acceptance, relevance to Australia and recipient countries, and alignment with the UN SDGs. These additional frameworks included:

- Food and Agriculture Organisation Sustainability Assessment of Food and Agriculture Systems
- Sustainable Agriculture Initiative Platform

- Global Reporting Initiative
- Australian Agriculture Sustainability Framework
- Sheep Sustainability Framework (Australia)
- Australian Beef Sustainability Framework
- Dairy Sustainability Framework (Australia)

Themes of prospective contribution by the livestock export industry were developed in association with the LEP RD&E Program. Each framework was then assessed with a set of parameters including relevance to the selected supply chains, the presence of indicators that matched contribution themes and the strengths and weaknesses of each framework. Indicators were developed from this assessment and tested with the LEP team for relevance.

Finally, data was sought to match the indicators developed. This data was sought from stakeholders and LEP in-market staff, from the Australian Bureau of Statistics (ABS) and statistics bureaux from destination markets, from academic literature, company reports and Australian livestock exporters. The process for data collection was iterative, in that the relevance and usability of the indicators was assessed for both this report and potential future reports during the data collection process.

The four supply chains chosen for analysis were:

- Feeder cattle to Indonesia
- Slaughter cattle to Vietnam
- Slaughter sheep to Kuwait
- Dairy cattle to China

The broad themes developed from the analysis of the UN SDGs and other frameworks were:

- Economic development
- Capacity building
- Food security, health and nutrition
- Animal health and welfare
- Waste reduction and responsible production and consumption
- Enhanced partnership in international development.

Indicators were developed under each of these themes, and data was sought to match these indicators.

Results/key findings

A summary of the contributions in each supply theme is shown in [TABLE 1](#).

TABLE 1. Contributions of livestock exports to selected supply chains

THEME	INDONESIA CATTLE FEEDER	VIETNAM CATTLE SLAUGHTER	KUWAIT SHEEP SLAUGHTER	CHINA CATTLE DAIRY
Economic development (SDG 8 Decent work and economic growth)	Approx A\$929M wholesale revenue from sale of fattened cattle originating from Australia (2024). ~8,500 Indonesians employed.	Approx A\$360M wholesale revenue from sale of Australian cattle (2023). ~ 1,200 Vietnamese employed.	Approx A\$52M wholesale revenue from sale of Australian sheep (2024).	Approx A\$886M wholesale revenue from milk from Australian cattle in China (2024).
Capacity building (SDG 4 Quality education)	Extensive investment in animal welfare, biosecurity and supply chain efficiency training. Over 14,000 trained since 2021. Also exchange programs to Australia.	Managing Abattoirs, Training and Exchange of Skills program in 2018-19 trained 76 Vietnamese. Funded by Australian Government.	Support given by LiveCorp and MLA through publishing of guidance materials. Exporters supported through LEP co-funding for capacity building.	No publicly available data exists.
Food security, health and nutrition (SDG 2 Zero hunger)	Demand for beef is rising, and Australia partly fills the shortfall in supply, especially for the food system outside of refrigerated supply chains. From 2020 to 2024, Australian cattle contributed approximately 83,660 tonnes of meat annually, plus 8,335 tonnes of offal to cover the per capita beef consumption of 32.1M Indonesians.	Australian cattle contribute to meeting beef demand. From 2020 to 2024 Australia contributed approx. 28,000 tonnes of beef annually to Vietnam, to cover the per capita beef consumption of 3.1M Vietnamese.	Since the 1960s, Australia has consistently contributed high quality sheep to the protein supply system in Kuwait. From 2020 to 2024 Australia contributed approx. 5,919 tonnes of lamb /mutton to cover the annual per capita consumption of 411,000 Kuwaitis.	Over 1M dairy cattle sent to China over the past 24 years. Significant contribution to the growth of China's dairy sector to meet increased demand. Conservatively Australian cattle contribute 1.5 million tonnes of milk per annum to cover per capita consumption of 35.7M Chinese.
Animal health and welfare	Implementation of ESCAS has improved practices from livestock arrival to point of slaughter. Has been significant investment in infrastructure.	ESCAS has improved practices from livestock arrival to point of slaughter. Has been significant investment in infrastructure. Widespread	ESCAS has improved practices from livestock arrival to point of slaughter. Has been significant investment in infrastructure to protect sheep against	Exports of dairy cattle to China have shorter journey times than Australia's main competitors.

THEME	INDONESIA CATTLE FEEDER	VIETNAM CATTLE SLAUGHTER	KUWAIT SHEEP SLAUGHTER	CHINA CATTLE DAIRY
	<p>4M vaccinations supplied by Australia to Indonesia for FMD.</p> <p>Vaccination of Australian cattle in feedlots and other biosecurity measures partly funded by the Australian Government via grants to LiveCorp and MLA.</p> <p>405,027 smallholder livestock vaccinated against Lumpy Skin Disease and Foot and Mouth Disease (in 2022-23) from LiveCorp/ Australian Government grant.</p>	<p>adoption of stunning, supported by Australia. New animal welfare standards adopted in Vietnam modelled from Australian domestic standards.</p>	<p>heat, including shade, fans and misting in yards and holding facilities.</p>	
Waste reduction and responsible production and consumption (SDG 12 Sustainable consumption and production patterns)	<p>Breeding cattle in Northern Australia and finishing in Indonesia is a complementary and efficient system that takes advantage of the strengths of both countries. Waste plant products are used to feed imported cattle in feedlots and waste product is used as fertiliser and fuel.</p>	<p>High level of offal utilised under Vietnamese systems for human consumption.</p>	<p>No publicly available data exists.</p>	<p>No publicly available data exists.</p>
Partnership in International development (SDG 17 Partnership for the goals)	<p>The Indonesia-Australia Comprehensive Economic Partnership Agreement (IA-CEPA) enhances the economic partnership between Australia and Indonesia, reducing tariffs on live male cattle exports from Australia to Indonesia.</p> <p>Indonesia-Australia Partnership on Food</p>	<p>ASEAN Australia New Zealand Free Trade Agreement (AANZFTA), which includes Vietnam, facilitates livestock exports.</p> <p>Australia and Vietnam have a comprehensive strategic partnership.</p>	<p>The Australia-Gulf Cooperation Council is an emerging free-trade agreement with Gulf nations, including Kuwait.</p>	<p>China-Australia free trade agreement facilitates livestock exports.</p>

THEME	INDONESIA CATTLE FEEDER	VIETNAM CATTLE SLAUGHTER	KUWAIT SHEEP SLAUGHTER	CHINA CATTLE DAIRY
	<p>Security in the Red Meat and Cattle Sector ran from 2013 to 2023.</p> <p>Australia-Indonesia Partnership for promoting rural incomes through support for markets in Agriculture (PRISMA-2) ran from 2019 to 2023.</p>			

Benefits to industry

The project has developed a framework for assessing the benefits of the livestock export industry to destination countries, and to show the links back to the UN SDGs and other sustainability frameworks. It has also demonstrated what data can easily be obtained and what data could not realistically be gathered for the purposes of this project. The data collected enables the communication of the benefits of the livestock export trade to destination countries.

Future research and recommendations

The indicators developed in this project will continue to guide future data collection and reporting under the current contribution themes, but several gaps and improvement opportunities remain. Key priorities include addressing missing data, particularly around employment, infrastructure investment, and recycled materials, through new partnerships or pilot initiatives; enhancing systematic data collection in destination countries via collaboration with local stakeholders; and regularly reviewing and refining indicators to ensure relevance and alignment with UN SDGs. Where quantitative data is limited, case studies can help illustrate industry impacts, and ongoing stakeholder engagement is vital for validating indicators and sharing best practices. Transparent communication of both achievements and challenges will help build trust and demonstrate the livestock export industry’s commitment to sustainable development in international markets.

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Abbreviations and Acronyms

TABLE 2. Abbreviations and acronyms used in this report

ABBREVIATION OR ACRONYM	MEANING
ABARES	Australian Bureau of Agricultural and Resource Economics and Sciences
ABS	Australian Bureau of Statistics
ACIAR	Australian Centre for International Agricultural Research
ALEC	Australian Livestock Exporters' Council
AMSA	Australian Marine Safety Authority
APFINDO	Asosiasi Produsen Daging dan Feedlot Indonesia, which translates to the Indonesian Meat Producers and Feedlot Association. Started in 1992, it changed its name in 2016 to GAPUSPINDO.
ASEL	Australian Standards for the Export of Livestock
AWO	Animal Welfare Officer
BPS	Badan Pusat Statistik (Indonesia's National Statistics Agency)
CDU	Charles Darwin University
DAFF	Australian Government Department of Agriculture, Fisheries and Forestry
ESCAS	Exporter Supply Chain Assurance System
ESG	Environment, Social and Governance
EU	European Union
FAO	Food and Agriculture Organisation of the United Nations
FAOSTAT	FAO statistics database
FAWO	Forum AWO
FMD	Foot and mouth disease
GAPUSPINDO	Gabungan Pelaku Usaha Peternakan Sapi Potong Indonesia (the Indonesian Beef Cattle Businessmen's Association). Originally called APFINDO until the change of name in 2016.
IA-CEPA	The Indonesia-Australia Comprehensive Economic Partnership Agreement

ABBREVIATION OR ACRONYM	MEANING
KLTT	Kuwait Livestock Transport and Trading Company
LEP	Livestock Export Program, jointly funded by LiveCorp and Meat & Livestock Australia
LSD	Lumpy Skin Disease
MATES	The Managing Abattoirs, Training and Exchange of Skills Program (Vietnam 2018)
MENA	Middle East North Africa (group of countries)
MLA	Meat & Livestock Australia
NIAPP	NTCA Indonesia Australia Pastoral Program 2013 to 2023
NTCA	Northern Territory Cattlemen’s Association
PRISMA-2	Australia-Indonesia Partnership for Promoting Rural Incomes through Support for Markets in Agriculture (2nd 5-year program 2019-23)
Red Meat Partnership	The Indonesia-Australia Partnership on Food Security in the Red Meat and Cattle Sector 2013-23
RETWA	Rural Export and Trading (WA) Pty Ltd. A subsidiary of KLTT and the largest sheep exporter from Australia to the Middle East.
SDGs	Sustainable Development Goals
SOP	Standard Operating Procedures
TQSW	TAFE Queensland Southwest
UN	United Nations

1. Background

There is an increasing trend for agricultural industries to report on metrics relating to sustainability as well as ESG intentions and performance. As part of this, the Australian livestock export trade has attracted strong public interest and increasing pressure from the Australian Government, financial institutions, the community and trading partners.

The Australian livestock export industry has been operating since the early 1800s, with cattle shipments to South East Asia from Northern Australia commencing in 1884, and sheep to the Middle East from 1960. Today livestock are exported by both ship and aeroplane to around 20 countries, with major destinations including Indonesia, Vietnam, Kuwait and China. Cattle, sheep, goats, buffalo and camelids (camels, alpacas and llamas) are all exported. Livestock have various uses according to approved protocols in each destination country. In some countries, such as most cattle sent to Indonesia, livestock are held in feedlots until they reach the required weight for slaughter. Most of the cattle exported to Vietnam, and sheep to Kuwait, are sent for slaughter soon after arrival. Dairy cattle are sent to various countries as breeding stock for milk production. While the value of the livestock export trade to Australian producers has been well reported, there is less quantifiable data available about the impact of the trade on the importing countries.

The aim of this project was to take an international perspective to quantify and communicate the contributions of the livestock export industry to destination countries, assessed against the UN SDGs and other relevant domestic and international ESG or sustainability standards.

By gathering data and assessing the supply chains of destination markets, information can be obtained to illustrate the advantages and positive effects of the trade. This information is valuable for industry efforts related to community sentiment, the annual *State of the Industry* report, and contributions to the continuous development of the Australian beef, sheep, and dairy sustainability frameworks.

A brief description of each market studied is given below.

1.1 Market descriptions

1.1.1 Indonesia

Australia has been the main international partner for live cattle exports to Indonesia (Agus & Widi, 2018). FAO records show live cattle imports by Indonesia as far back as 1973 (FIGURE 1). Live cattle were imported by Indonesia in small numbers until the mid-1990s, when imports increased significantly.

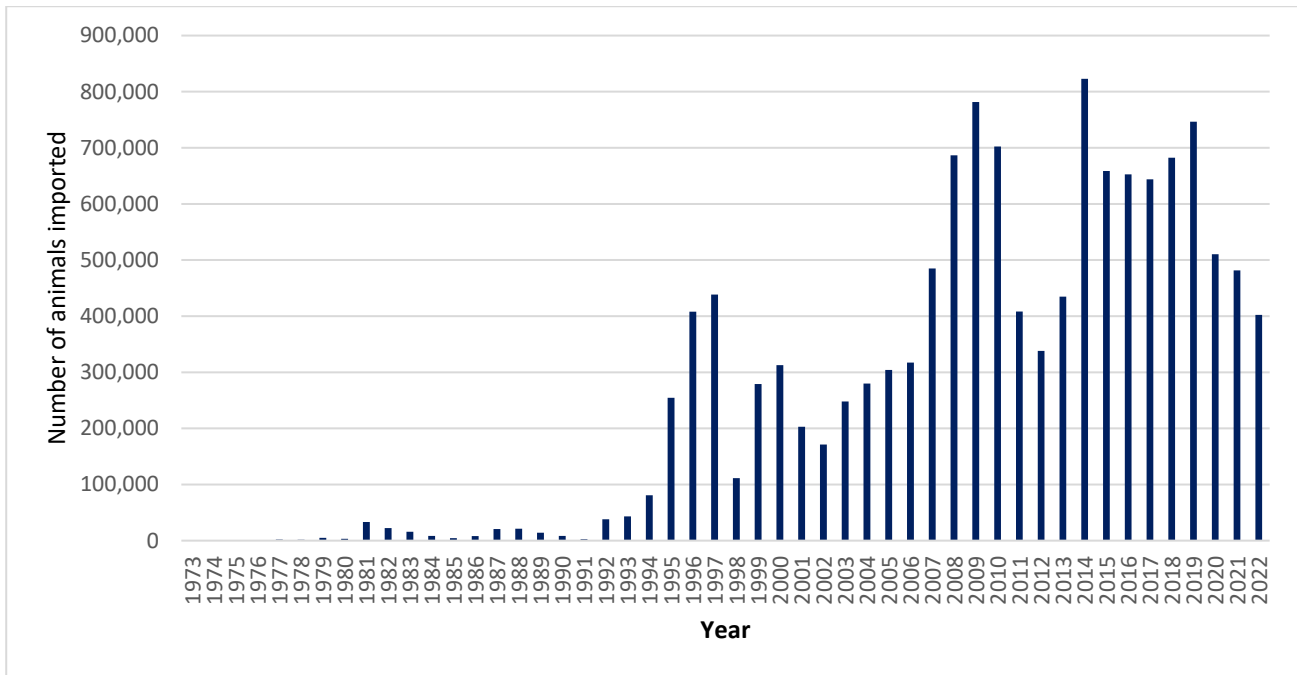


FIGURE 1. Live cattle imports by Indonesia from 1973 to 2023 from all countries (FAO, 2025)

Beef is an important protein source in the diets of Indonesian people, especially those from Muslim backgrounds, and demand for beef has increased as incomes have risen (Susilo & Suhardi, 2022). Australian feeder cattle from Northern Australia, which is geographically close to Indonesia, are finished in Indonesia at local feedlots and processed in local abattoirs (MLA, 2022). Northern Australia’s strengths in breeder production and Indonesia’s advantages in cattle finishing have supported a mutually beneficial trade relationship for over 30 years, delivering substantial socio-economic benefits to Indonesia.

Australia’s only viable competitors for large-scale live cattle exports to Indonesia are South American countries, particularly Brazil. However, Brazil has been unable to gain access to the Indonesian market for the last 25 years due to the prevalence of foot and mouth disease (FMD). Indonesia was declared free from FMD from 1986 until an outbreak in April 2022 (World Organisation for Animal Health, 2022) while Brazil had active FMD cases from 2000. Brazil was formally declared free of FMD without vaccination in June 2025. Subsequently senior Indonesian government officials announced the revision of Government Regulation no. 4 of 2016, allowing the importation of cattle from Brazil and from New Zealand (Nason, 2025d). However, it has also been reported that there are still some regulatory authorisations that need to be granted before Brazilian importations could become a reality (Schandert, 2025).

Exports of cattle from South America to Indonesia are unlikely to pose significant competition to Australian exporters due to ongoing logistical and economic constraints. Any viable exports would most likely originate from Brazil or Uruguay and depart from Atlantic coast ports such as Vila do Conde, São Sebastião or Rio Grande, rather than from Pacific ports on the west coast of South America. Shipments to Indonesia would involve a voyage of approximately 30–35 days via the Cape of Good Hope, potentially including a stop in Cape Town for restocking feed, compared to much shorter voyage times of 4–5 days from northern Australia (Beef Central, 2024). While these extended transit times and higher shipping costs reduce the competitiveness of South American cattle, their presence in the Indonesian market could nonetheless exert some downward pressure on prices, requiring Australian exporters to remain price competitive. Australia is therefore unlikely to lose its competitive advantage, but the presence of South American cattle in the market could put pressure on Australian exporters to keep prices competitive. New Zealand banned the live export of dairy cattle by sea in April 2023, and although the New Zealand government has stated an

intention to lift the ban under stringent animal welfare standards and using purpose-built vessels, as of September 2025 the ban on exports by sea remained in place.

A more significant competitor to the live cattle trade is frozen boxed meat, particularly Indian buffalo meat. While Indian buffalo meat is generally not regarded as high quality, it is available in large volumes at low cost and is widely accepted in Indonesia for use in manufactured products such as the ubiquitous ‘bakso’ meatballs. For other dishes, however, fresh meat purchased from the ‘wet market’ is preferred and this is a major factor in the continued success of livestock exports.

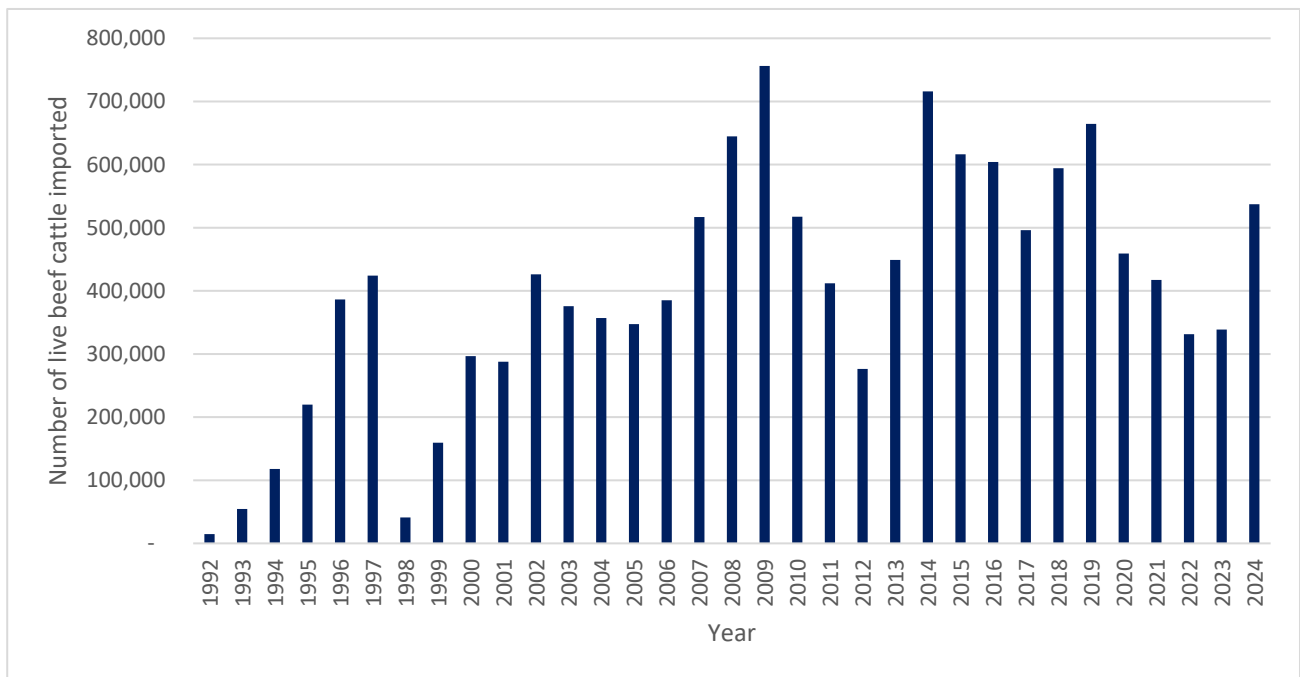


FIGURE 2. Total live beef cattle imports by Indonesia from Australia for calendar years 1992 to 2024 (ABS, 2024)

Australia holds a dominant position in the Indonesian market for imported beef cattle with 13.36 million cattle imported from Australia since 1989. The only other significant contributions have come from New Zealand, which sent 26,746 cattle, mostly between 1990-1997, and 7,148 slaughter cattle from the USA in 2006.

Indonesia was still struggling with the impact of COVID-19 on tourism and consumer spending when lumpy skin disease (LSD) and then FMD were detected in 2022. The disease outbreaks led to perceived concerns around the safety of eating beef, restrictions on livestock movements, and additional time in feedlots to manage affected animals, which initially saw cattle importers reduce volumes to manage risk. Australian cattle prices also hit record highs in January 2022, and the figure of 339,304 head exported to Indonesia in 2022 was the lowest since 2012. However, imports rose again with a 6% increase to 359,305 head in 2023, and a 50% increase to 537,274 in 2024 (MLA, 2025a).

In January 2025, Indonesian Deputy Minister of Agriculture Sudaryono told local media that the Government recognises the value of live cattle imports, saying they support local employment, enable the purchase of commodities from farmers, and strengthen the domestic supply of fresh beef. As a result, the Indonesian Government “will slowly reduce the volume of beef imports each year and increase the import of live cattle each year” (Katadata, 2025). He suggested that 200,000 extra beef cattle each year could be grown out by small scale operators as well as large feedlots.

Subsequently the Indonesian Government raised the 2025 import quota for live cattle by 184,000 head and lowered the quota for imports of Indian buffalo meat and boxed beef (Nason, 2025c). In mid-June 2025, quota limits for live cattle were removed altogether, thus permitting importers to bring in as many live cattle as the market can sustain to support the livestock industry and meet public consumption needs (although import permits will still be required). Quotas for imports of boxed beef or Indian buffalo meat were not lifted. The trends are therefore very positive for livestock exports to Indonesia.

1.1.2 Vietnam

Live cattle imports by Vietnam from all countries were very low until 2013, but have since increased (FAO, 2025) (FIGURE 3). FIGURE 4 shows the number of cattle imported by Vietnam from Australia. The increase in cattle exports to Vietnam has been due to increased demand for meat, alongside rising incomes and population. Australian beef is considered high quality, but the market is very price-conscious, importing Australian animals when the price is affordable. Since Vietnam mainly imports slaughter-ready cattle, they have little capacity to manage costs by value-adding. FIGURE 5 shows in more detail the comparison between live cattle imported from Australia and other sources (ABS, 2024; FAO, 2025).

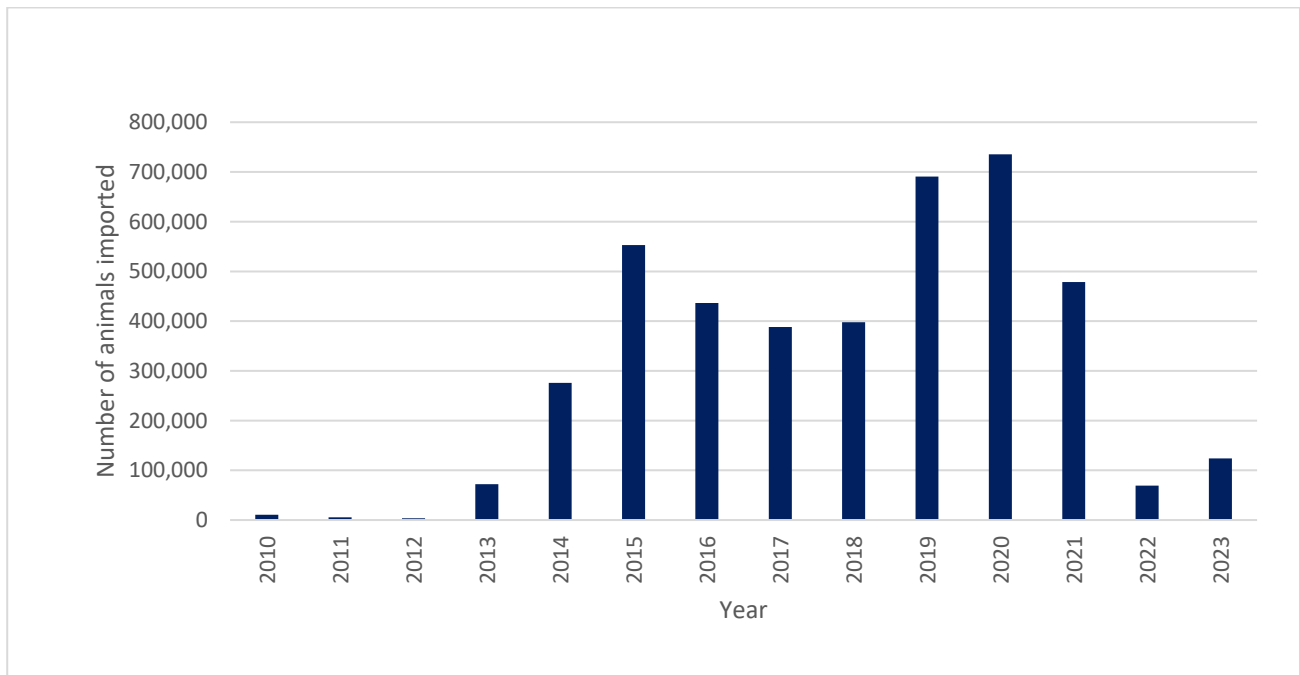


FIGURE 3. Vietnam cattle imports from 2010 to 2023 (FAO, 2025)

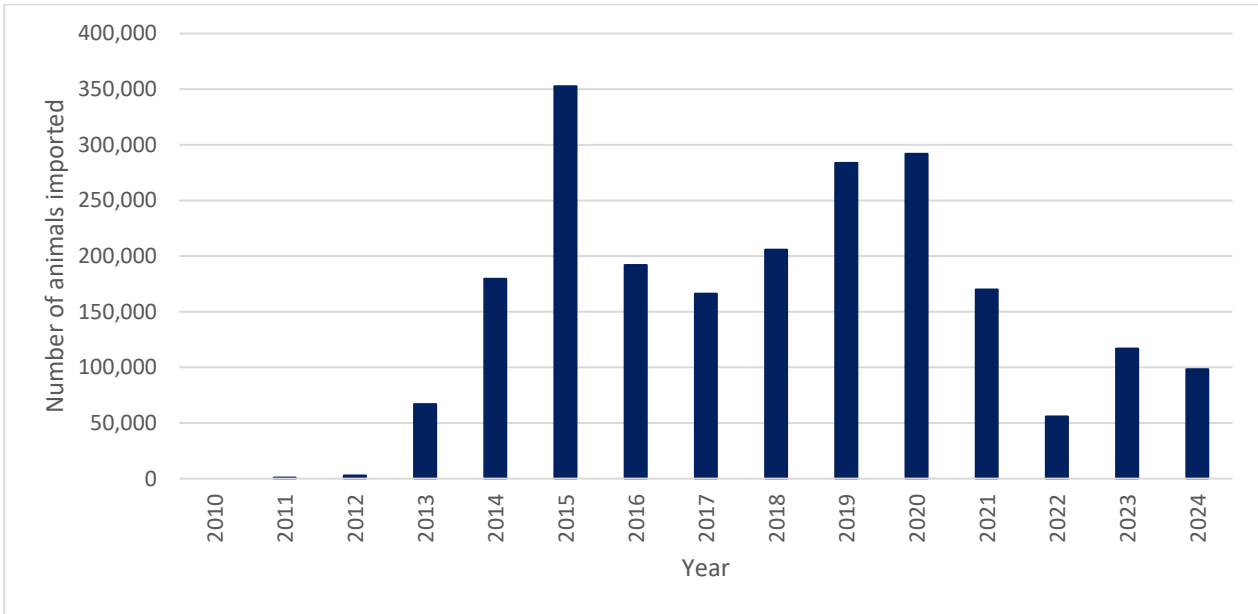


FIGURE 4. Cattle imports by Vietnam from Australia 2010 to 2024 (ABS, 2024)

The data on the total number of cattle imported into Vietnam is complicated by movement of local cattle across South East Asia, with much of the trade being undocumented. Myanmar has a substantial breeding cattle population, and their progeny are known to travel through Thailand and Laos into Vietnam and, in some years, into China. Indian buffalo meat is also imported and traded in very large quantities.

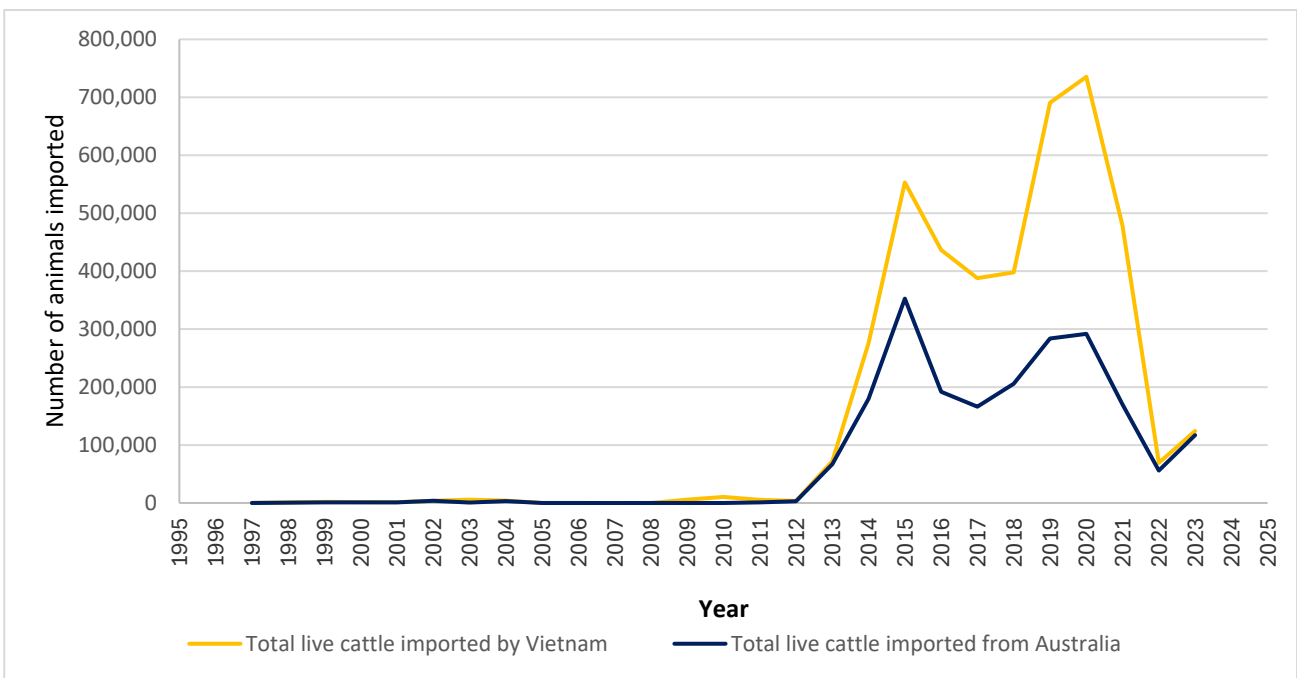


FIGURE 5. Vietnam live cattle imports from all countries and from Australia 1995 to 2023 (ABS, 2024) (FAO, 2025)

Australian cattle exports to Vietnam surged between 2013 and 2015 (**FIGURE 5**), prompting concerns about the pace and structure of market growth. The rapid expansion placed pressure on supply chains, with several feedlot start-ups unable to maintain viability.

In hindsight, the subsequent return to more moderate volumes was broadly welcomed within the industry as it allowed for a more stable and sustainable trade environment. When Australian cattle prices increased from 2021, many companies stopped trading in cattle, and Australian cattle are now only imported by a small number of larger, commercially viable companies. As of March 2025, there were thought to be six Vietnamese companies actively importing live cattle (Focus Group Go Asia Pacific, 2025).

In 2018, there were at least 370 known abattoirs of which 120 processed Australian cattle, while in 2024 only 99 abattoirs were known to be operating of which 54 were processing Australian cattle (Patching & Coole, 2024). Only four Vietnamese abattoirs are considered large scale, with most being small-scale family run operations. However, in December 2024, the Sojitz Corporation, a Japanese investment company, commissioned a new modern beef processing facility in Vietnam's Vinh Phuc Province, which is said to be the nation's largest beef processing plant. A 10,000 head cattle farm planned to be built adjacent to the plant may provide a major outlet for Australian cattle in a modern integrated production system (Sojitz Corporation, 2024).

1.1.3 Kuwait

Sheep have been a traditional food source in the Middle East for thousands of years. Australia has been exporting live sheep to the Middle East since 1960 (**FIGURE 6**) when a 2,500 head consignment from Western Australia was sent to Kuwait (ALEC, 2024). Based on ABS data (only available since 1992), a total number of approximately 29.3 million live sheep were exported from Australia to Kuwait up until the end of 2023 (**FIGURE 7**). **FIGURE 7**. Total live sheep imports by Kuwait from Australia from 1992 to 2024

In Kuwait, the small amount of available arable land, coupled with water scarcity, soil deficiencies, and lack of trained agricultural workers results in a reliance on imports of sheep which they are unable to produce domestically at scale (Almutawa & Abdulrahman, 2023). A local breeding program struggled to grow its flock over a five-year period, having an insignificant impact on food security. Research on heat-tolerant sheep breeds is underway but still in the early stages (Hodges, 2024).

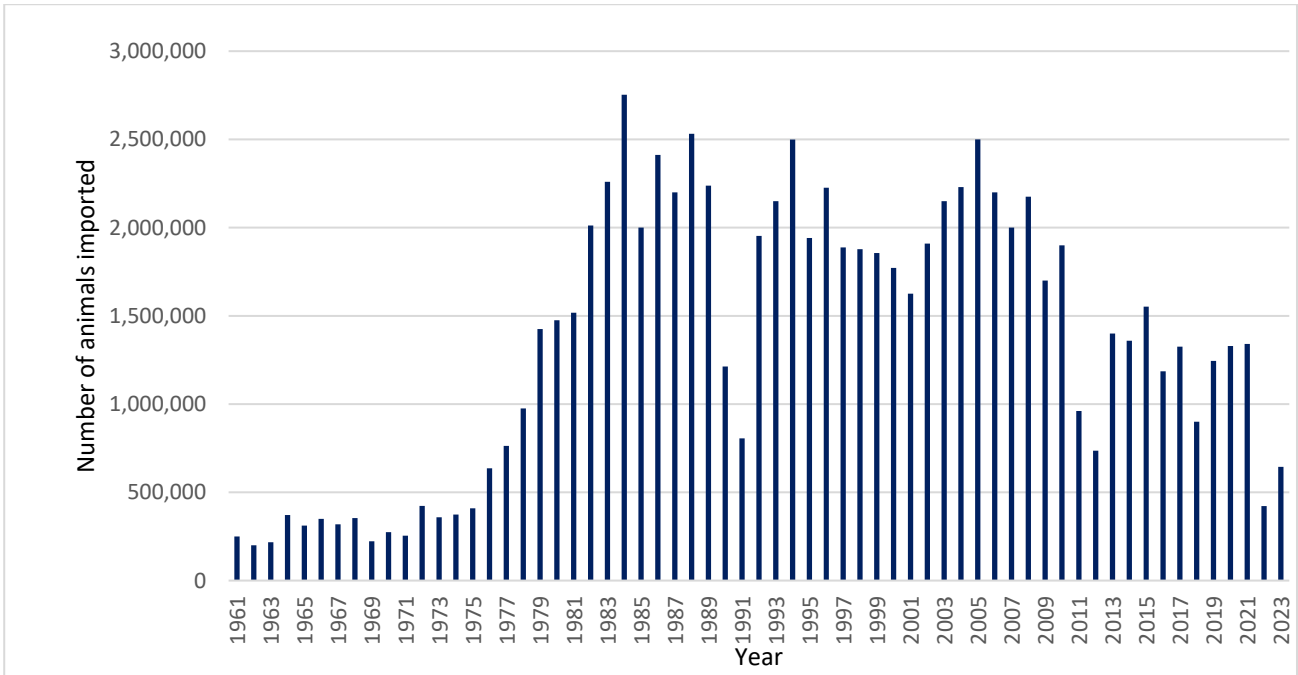


FIGURE 6. Sheep imported by Kuwait from all origins, including Australia, from 1961 to 2023

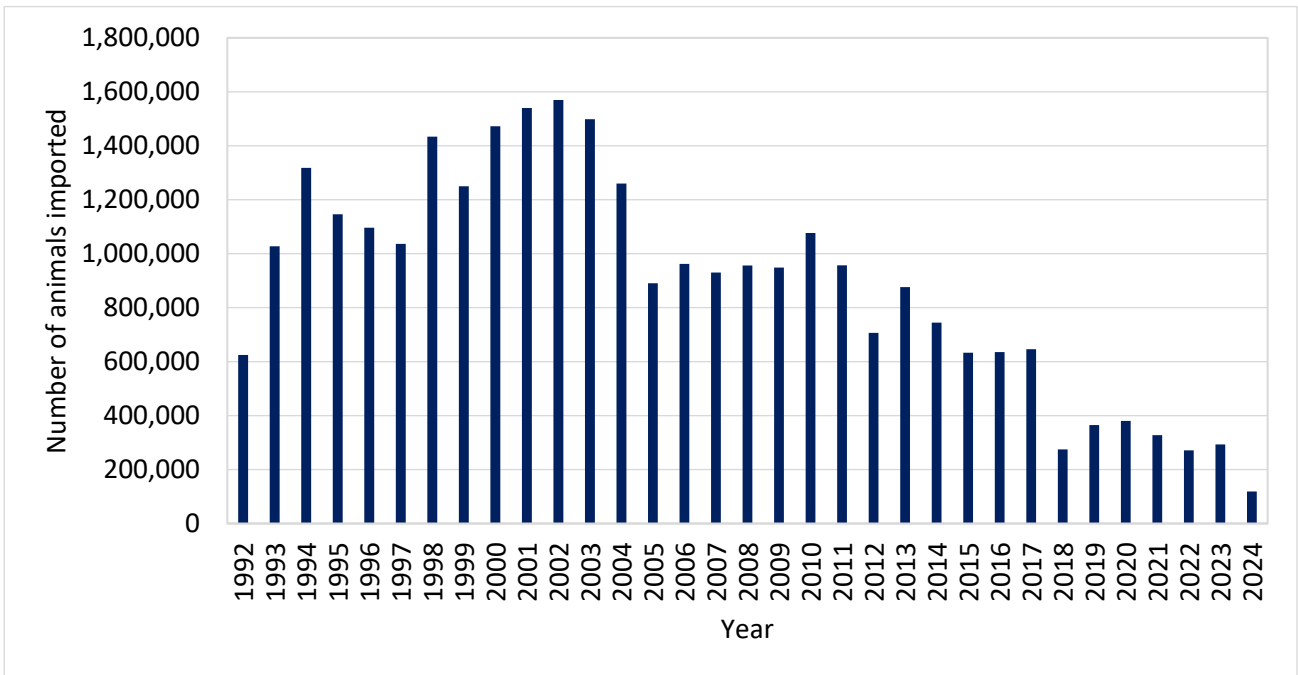


FIGURE 7. Total live sheep imports by Kuwait from Australia from 1992 to 2024

Australia’s sheep export system to Kuwait has proved to be very reliable for many years (Hodges, 2024). Alternative sources of livestock are complicated by disease risks, regulations within supplying countries regarding trucking routes, and other supply chain inefficiencies. The average voyage from Western Australia to Kuwait is 18.5 days, with an average consignment size of 46,115 head (LiveCorp, 2023). More recently conflicts in the Red Sea have affected shipping routes, increasing voyage times, transport and insurance costs (Zeljko et al., 2024).

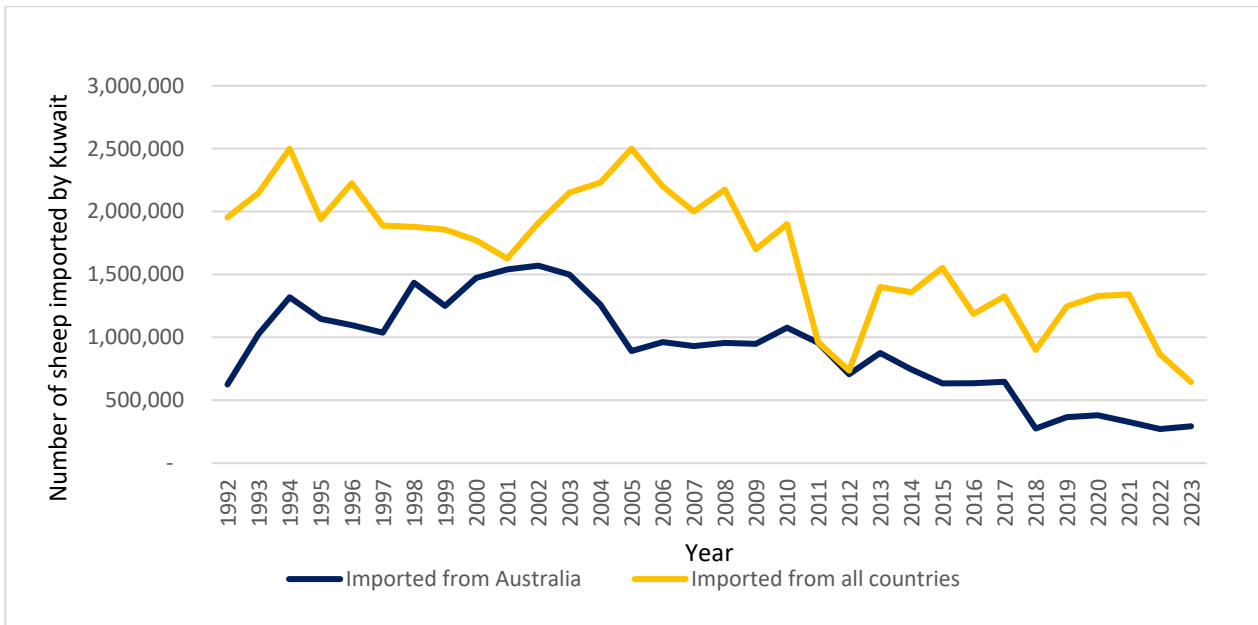


FIGURE 8. Live sheep imported from all countries compared to live sheep imported from Australia 1992 to 2023 (ABS, 2024) (FAO, 2025)

While Kuwait remains a dominant market for live sheep imports from Australia, sheep exports to all Middle East North African (MENA) markets have declined substantially since 2002. ABARES concluded that the decline has been driven significantly by the substantial increase in the cost of sourcing live sheep from Australia (ABARES, 2023). This has been attributed to several factors, including increased regulatory intervention and a 50% reduction in Australia’s sheep flock between 2000 and 2020. In Western Australia, many farmers have shifted from sheep to cropping to capitalise on high grain prices. Since 2020, strong seasonal conditions in the eastern states have also driven increased demand for flock rebuilding (Dalgleish, et al., 2023).

Since 2019, another contributor to the reduction in numbers of sheep exported from Australia to Kuwait has been the industry-imposed moratorium on shipments between June and September, expressed in [FIGURE 9](#). This moratorium was later included in the regulations governing live sheep exports. This creates a seasonal supply gap, especially in those years when it overlaps with peak demand at Eid al-Adha. As a result, there has been increased competition from other countries such as Spain, Georgia, Romania, and countries in North East Africa (MLA, 2024a). The European Union (EU) is now the world’s largest exporter of live sheep, with the majority originating in Romania. In 2021, the EU exported A\$630 million worth of live sheep, of which over 90% were sent to the Middle East, while Australia exported only A\$111 million worth (ABARES, 2023).

Another important factor is the reduced number of ships approved by the Australian Maritime Safety Authority (AMSA) for live animal transport from Australia, from 32 ships in 2020 to 20 ships in 2025 (Nason, 2025b). The northern summer moratorium results in ships seeking other routes from June until September and, with increased demand for shipping capacity on other trade routes worldwide, some may not return. The fleet is aging and rising compliance and maintenance costs has discouraged investment in new ships (Nason, 2025b).

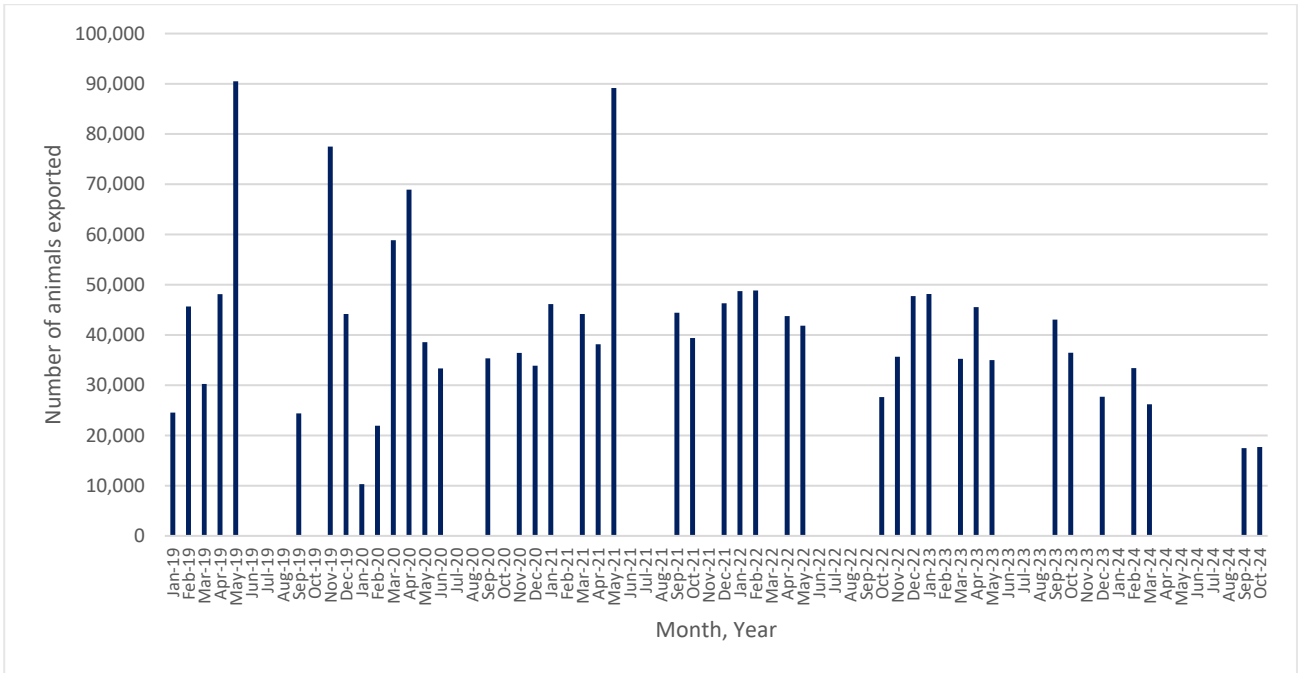


FIGURE 9. Month by month number of sheep exported by sea to Kuwait for slaughter, by month between January 2019 and October 2024, demonstrating the moratorium June-September (DAFF, 2024a).

1.1.4 China

Live cattle imports into China have mainly occurred over the last 25 years. **FIGURE 10.** Live cattle imported by mainland China from all countries 2000 to 2023

shows all live cattle imports from all countries, and the FAO statistics do not specify the end use, so the data contains both imported dairy and beef cattle.

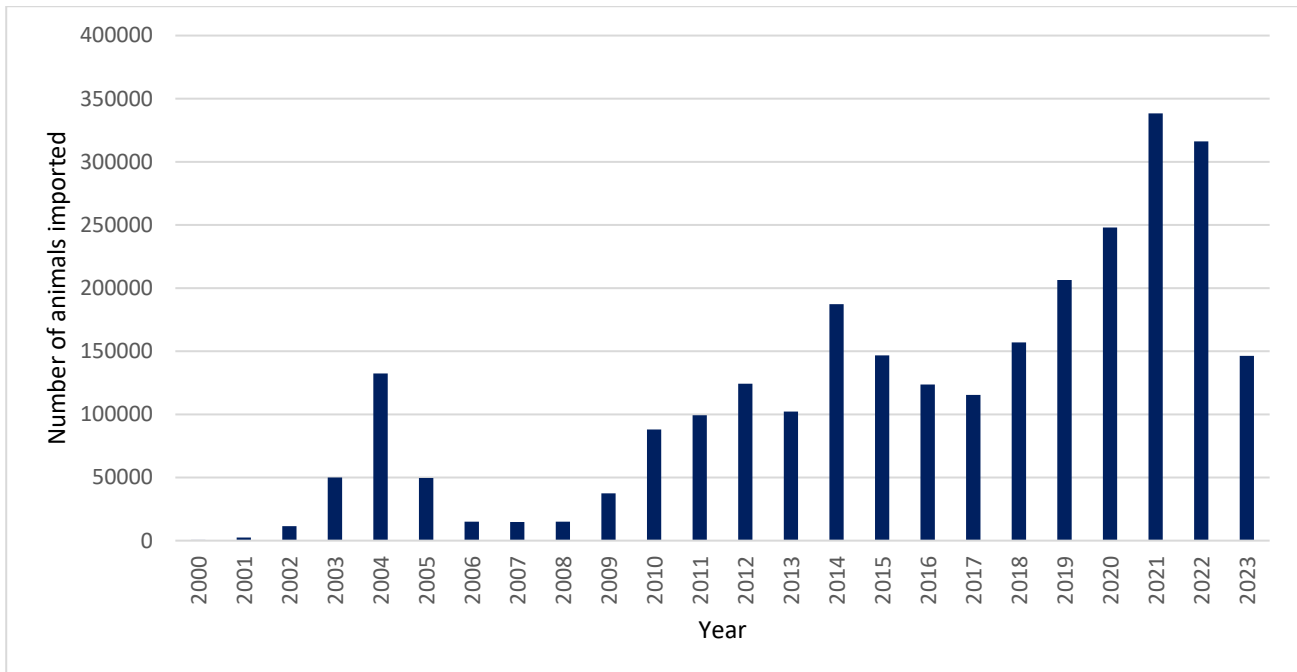


FIGURE 10. Live cattle imported by mainland China from all countries 2000 to 2023

Australia predominantly exports dairy cattle to China due to the demand from that country to build its dairy herd to meet increasing demand for dairy products. Over a million cows have been imported by China from Australia since the turn of the century, approximately equal to New Zealand as the main overseas contributors to the Chinese dairy herd. By 2024, China was becoming self-sufficient in milk products and demand for imported dairy heifers has therefore greatly declined.

The freight-on-board value of dairy cattle exported from Australia to China increased from \$56M in 2001-02 to \$258M in 2021-22 (BDO Econsearch, 2022). This increase in value was primarily from an increase in import numbers (FIGURE 11). Australia has several advantages for the export of dairy cattle to China including:

- Good genetic pool
- Stringent health protocols
- Disease free livestock
- Resilient genetics, which convey the ability to thrive in variable weather conditions
- Large population of livestock
- Proximity to China
- Businesses are experienced in a regulatory environment
- Good animal welfare and work health and safety practices
- Lack of competitors e.g. New Zealand exported similar numbers of dairy heifers to China until they banned exports by sea from 2023 (although this ban is now being reconsidered). Amongst other potential suppliers, USA does not export dairy cattle, and South American countries are more remote. China also prohibited importation of cattle from FMD-affected regions, which included Brazil from 2000. Brazil was formally recognised as being FMD-free in June 2025.
- Australia has access to China through a free trade agreement (BDO Econsearch, 2022; Edwards, et al., 2016).

Around 26% of Australian dairy farms participated in live exports to China in 2019-20, employing approximately 830 full time equivalents in Australia, and giving Australian dairy farms an alternative source of income, effectively reducing market risk (BDO Econsearch, 2022).

FIGURE 11 shows the number of dairy cattle exported to China from Australia. The trade began in 2001, although statistics are only available from 2003 (ABS customised report, 2024). Most dairy cattle exported from Australia to China in the last six years have been out of the ports of Portland, Geelong and Melbourne (Victoria), Fremantle (Western Australia) and Port Adelaide (South Australia) (based on DAFF data, 2024).

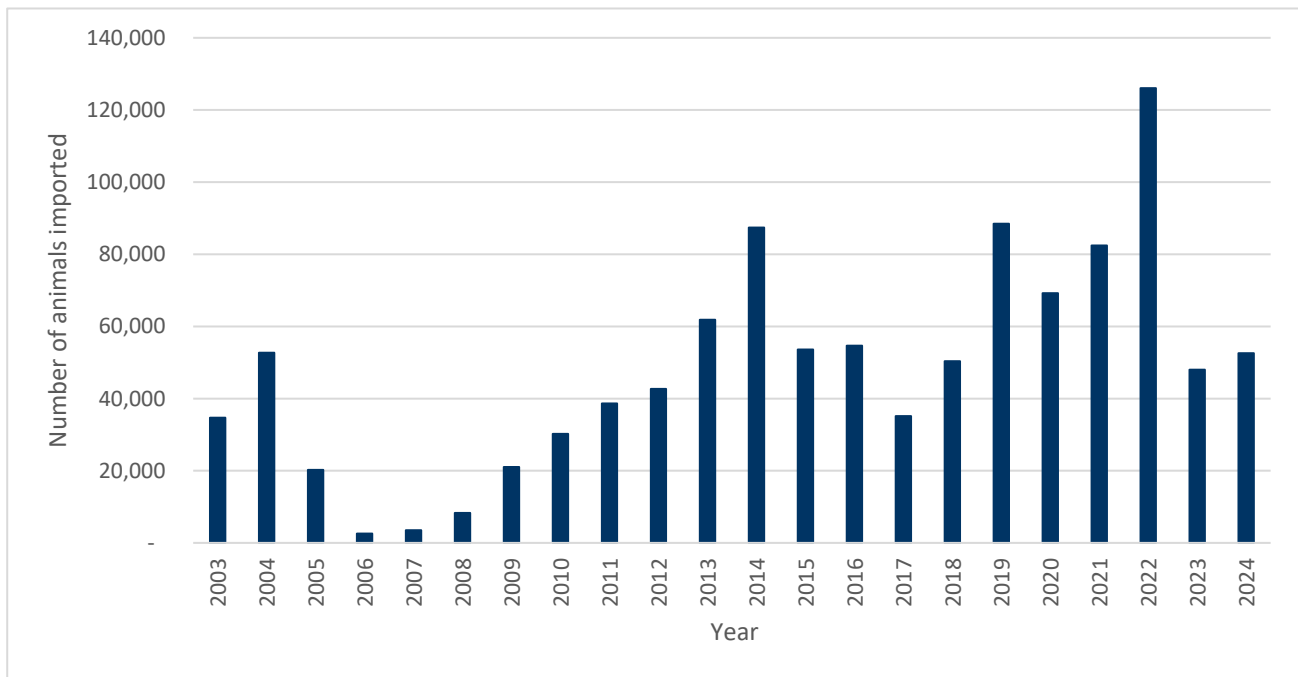


FIGURE 11. Total live dairy cattle imports by China from Australia from 2003 to 2024 (ABS, 2024)

Australia has a high market share of live cattle exports to China. **FIGURE 12** shows total imports by China (which includes all types of cattle) compared to dairy cattle imports from Australia for 2003 to 2023.

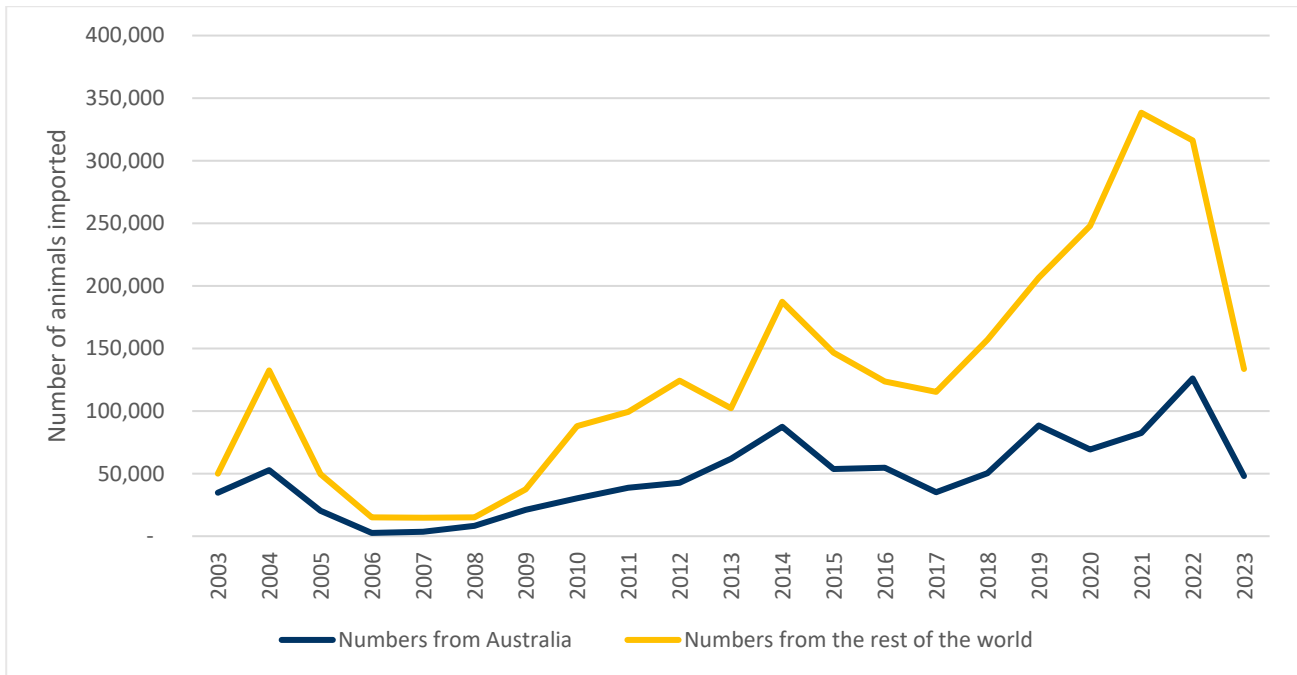


FIGURE 12. Total cattle imported by China from all sources compared to dairy cattle imported from Australia 2003 to 2023 (ABS, 2024) (FAO, 2025)

As can be seen from [FIGURE 11](#), the high point of Australian dairy cattle exports to China was 2022, with 126,045 head. This was approximately 40% of the 316,204 live cattle imported by China in that year, with New Zealand supplying most of the remainder.

Dairy cattle exports to China declined significantly throughout 2023 and 2024. This downturn was largely driven by a domestic oversupply, as milk production in China began to outpace local consumption. As a result, raw milk prices dropped considerably during the first eight months of 2024, placing substantial financial pressure on dairy producers (Marianetti, 2024). The Chinese dairy sector is largely structured around vertically integrated operations, with many farms owned and operated by processing companies. These enterprises are often very large in scale and dominate the commercial landscape. However, despite their size, profitability has been a growing concern. As of mid-2024, at least nine dairy farming companies were publicly listed on the stock exchange, and seven of these reported financial losses in the first half of the year. Compounding this, national dairy cattle inventory declined by nearly 3% over the same period, reflecting industry-wide consolidation and financial strain. Many small and medium-sized dairy farms, unable to remain viable in this challenging economic environment, have exited the market altogether (Marianetti, 2024).

2. Methodology

2.1 Scope and selection of markets

The scoping of the assessment is based around the *Sustainability Assessment of Food and Agriculture Systems Guidelines v 3.0*, published by the Food and Agriculture Organisation of the United Nations (FAO,

2014). The *Guidelines* recommend clarification of the assessed entities, which in this case are entire supply chains post the point of entry of livestock to their destination countries.

This project studied the contribution of the livestock export trade to international development goals in four key markets. The methodology for selecting these markets and determining the specific aspects to study from temporal, physical, and spatial perspectives is outlined below.

The scope of the project was determined by initial interviews with LEP in-market managers, then by a process where LiveCorp and the MLA staff involved in the LEP could nominate markets, defining the country, species and purpose. The nominated markets were then ranked. The criteria for selection of markets included market size, presence of an LEP in-country manager, confidence in data acquisition and perceived importance of the livestock export trade to sustainable development in destination nations.

The markets/supply chains chosen for analysis were:

- Indonesia, cattle, feeder
- Vietnam, cattle, slaughter
- Kuwait, sheep, slaughter
- China, cattle, dairy

These markets fitted well to the selection criteria for assessing markets to study and give a good geographic spread over the markets with which Australia engages. The time frame was limited by the availability of data and the fact that most livestock exports from Australia have occurred within the last 30 years.

2.2 Selection of sustainable development frameworks and indicators

2.2.1 Introduction

Sustainable development frameworks were selected to apply to both to livestock exports and international development. The residual indicators from these frameworks were applied to the priority supply chain markets to narrow down the search for data that could contribute to the story of how livestock exports contribute to international development.

There were three stages used to filter out indicators to use for this project. This is shown diagrammatically in [FIGURE 13](#):



FIGURE 13. Method to filter indicators

2.2.2 Defining themes for analysis

Themes were identified that were likely to reflect the various impacts of the livestock export industry on the recipient countries. Project team knowledge and the outcome of discussions with LEP in-market managers and LiveCorp staff were used to guide this process to probable themes of industry contribution.

Six themes were identified where there is a probable positive contribution to the livestock export industry. These were:

- Economic development
- Capacity building
- Food security, health and nutrition
- Animal health and welfare
- Waste reduction and responsible production and consumption
- Enhanced partnerships in international development.

2.2.3 Selection of frameworks

The primary framework considered for analysis is the UN SDGs. These SDGs provide a high-level framework to assess development at a national level. All other frameworks were analysed for their alignment with SDGs.

Other frameworks were selected based on:

- Relevance to the beef, sheep meat and dairy industries, particularly livestock exports.
- Global coverage and industry acceptance.

- Relevance to Australia and recipient countries.
- Alignment with SDGs.

Frameworks and instruments were also sought for destination countries but those discovered were either too broad or not suited to livestock industries.

The following frameworks were selected after applying the filtering process (TABLE 3):

TABLE 3. Selected sustainable development frameworks

FRAMEWORK	RELEVANCE
UN Sustainable Development Goals (SDGs)	Global coverage and part of initial brief.
Food and Agriculture Organisation (FAO) Sustainability Assessment of Food and Agriculture systems (SAFA)	Alignment with SDGs, endorsed by the UN and specific for agriculture.
Sustainable Agriculture Initiative (SAI) Platform	Global coverage and industry acceptance. Focus on the industry level.
Global Reporting Initiative (GRI)	Global coverage and industry acceptance.
Australian Agriculture Sustainability Framework (AASF)	Relevance to Australia.
Sheep Sustainability Framework (SSF)	Relevance to the sheep industry and Australia.
Australian Beef Sustainability Framework (ABSF)	Relevance to the beef industry and Australia.
Dairy Sustainability Framework (DSF)	Relevance to the dairy industry and Australia.

No relevant sustainability or development frameworks were found to be specific for livestock in the selected recipient countries - Indonesia, Vietnam, Kuwait and China.

An evaluation of the frameworks' applicability was conducted, with each framework reviewed based on several parameters including relevance to supply chains, indicators that align with in-market data for supply chains, indicators that align with contribution themes, strengths of the frameworks for this assessment and weaknesses of the frameworks for this assessment.

2.2.4 Stakeholder engagement to validate and refine the identified frameworks

Meetings were held with the LEP in-market managers and LiveCorp, ALEC, DAFF Animal Welfare Branch and the DAFF ESCAS branch in Canberra on 6 November 2024 to discuss the appropriateness of the frameworks developed and possible sources of data.

2.2.5 Selection of indicators from the frameworks

Each theme was systematically examined by evaluating its alignment with the relevant principles, goals, and indicators from each of the frameworks presented (TABLE 3). After determining relevance, a set of indicators for each theme was selected.

Criteria used for selection of individual indicators within frameworks were:

- Coverage of environmental, economic and socio-economic dimensions of sustainability.
- Practicality and simplicity considering field measurements and data availability (and data spatial and temporal coverage, reliability, accuracy and consistency).
- The meaningful use of indicators to consider differences in culture or geography to match locally relevant problems.
- Meaningfulness to end users.
- Cost effectiveness of data collection (Alaoui, et al., 2022).






Adapted indicators were used in data collection to achieve the overall goals of the project. They have been adapted because it was uncommon for a framework indicator, as originally written, to directly align with the in-market supply chain for livestock imported from Australia.







2.2.6 Review of indicators after data collection












The indicators were reviewed and revised if required after the data collection process based on their practical application. The practical gathering of data on the selected supply chains was difficult because of the number of entities involved and the lack of any formal data collection by central agencies to consolidate data specifically for a project of this type. However, some indicators were retained based on the expectation that relevant data might become available in the future and would be valuable to collect. As a result, certain indicators currently lack matching data, but it is recommended that processes be established to address these data gaps moving forward.











The selected indicators for identifying the benefits of livestock exports to recipient countries are compiled in the following table with alignment to the frameworks studied listed (TABLE 4).








TABLE 4. Summary of indicators by theme









THEME		INDICATOR		ALIGNED SUSTAINABILITY FRAMEWORKS INDICATOR #
Economic development		1.1 Direct economic value generated by the supply chains in destination countries of livestock exports	 UN SDGs	Goal 2: End hunger, achieve food security and improved nutrition and promote sustainable agriculture 2.3.1; 2.3.2
		1.2 Total employment		Goal 8: Promote sustained, inclusive and sustainable economic growth, full and productive employment and decent work for all 8.2.1; 8.3.1; 8.5.1; 8.5.2; 8.6.1
		1.3 Age and gender of workers		Goal 9: Build resilient infrastructure, promote inclusive and sustainable industrialisation and foster innovation 9.1.2; 9.2.1; 9.2.2
		1.4 Infrastructure investment		Goal 17: Strengthen the means of implementation and revitalise the Global Partnership for Sustainable Development 17.11.1
				 SAFA Dimension: Economic resilience C4.1.1; C4.1.2; C4.2.1 Dimension: Social wellbeing S1.1.1; S1.1.2
	 SAI Topic: Communities N/A Topic Livelihoods Topic: Resources and markets			
	 GRI Topic standard GRI 201: Economic performance 2016 Disclosure 201			






THEME	INDICATOR	ALIGNED SUSTAINABILITY FRAMEWORKS INDICATOR #			
			AASF	Theme: People, animals and community	Criteria 23; Criteria 29
			ABSF	Theme: Economic resilience Theme: People and community	Indicator 14.1; 14.2; 15.1; 16.1; 16.2; 19.1; 20.1; 21.1; 21.2; 21.3
			ASSF	Theme 3: Looking after our people, our customers and the community Theme 4: Ensuring a financially resilient industry	Indicator 6.2.1a; 6.2.1b; 6.2.1c; 6.2.1d; 8.1.1a; 8.2.1a; 8.2.1b; 8.3.1a; 8.3.1b
			ADSF	Commitment 1: Enhancing economic viability and livelihoods	N/A
Capacity building	 <p>2.1 Type and scope of capacity building programs implemented, and assistance provided for upgrading industry participant skills</p> <p>2.2 Participation rate in training, and demographic profile (age and sex)</p> <p>2.3 Scholarships provided by Australia relating to livestock exports</p>		UN SDGs	<p>Goal 4: Ensure inclusive and equitable quality education and promote lifelong learning opportunities for all.</p> <p>Goal 8: Promote sustained, inclusive and sustainable economic growth, full and productive employment and decent work for all.</p> <p>Goal 17: Strengthen the means of implementation and revitalise the Global Partnership for Sustainable Development.</p>	<p>4.3.1; 4.b.1</p> <p>8.6.1</p> <p>17.9.1</p>



THEME	INDICATOR	ALIGNED SUSTAINABILITY FRAMEWORKS INDICATOR #		
		 SAFA	Dimension: social well being	S1.2.1
		 SAI	Topic: Working and living conditions Topic: Communities	N/A
		 GRI	Topic standard GRI 404: Training and education 2016	Disclosure 404-2; 13.22.1
		 AASF	Theme: People, animals and communities	Criteria 23
		 ABSF	Theme: People and community	Indicator 23.3
		 ASSF	Theme 4: Looking after our people, our customers and the community	Indicator 6.1.1a
		 ADSF	Commitment 1: Enhancing economic viability and livelihoods	N/A
Food security, health and nutrition	 <p>3.1 Food volumes delivered to market through livestock exports in each recipient country</p> <p>3.2 Describe the contribution of livestock exports from Australia on food security or the food system in the recipient country</p>	 UN SDGs	Goal 2: End hunger, achieve food security and improved nutrition and promote sustainable agriculture	2.1.2
		 SAFA	Dimension: Economic resilience	C3.2.1
		 SAI	Not mentioned in the SAI	N/A

THEME	INDICATOR	ALIGNED SUSTAINABILITY FRAMEWORKS INDICATOR #			
			GRI	Topic 13.9: Food security	13.9.1; 13.9.2
			AASF	Theme: People, animals and community	Criteria 17
			ABSF	Theme: People and the community	N/A
			ASSF	Theme 3L Looking after our people, our customers and the community	N/A
			ADSF	Commitment 2: Improving wellbeing of people	N/A
Animal health and welfare	 <p>4.1 Describe the activities and practices implemented by the supply chain that effectively promote the health and welfare of animals</p> <p>4.2 Number of exported sheep and cattle processed through an ESCAS accredited establishment</p> <p>4.3 Number of ESCAS audits undertaken</p>		UN SDGs	N/A	N/A
			SAFA	Dimension: Environmental integrity	E6.1.1; E6.1.2; E6.2.1; E6.2.2; E6.2.3
			SAI	Topic: Animal welfare	N/A
			GRI	Topic 13.11: Animal health and welfare	Disclosure 3-3; 13.11.2

THEME	INDICATOR	ALIGNED SUSTAINABILITY FRAMEWORKS INDICATOR #			
	<p>4.4 Percentage of ESCAS approved abattoirs that use stunning.</p> <p>4.5 Vaccination rates in feedlots (FMD, LSD).</p> <p>4.6 Describe the programs and animal welfare training supported by Australia that have been undertaken, and how many people have completed them.</p> <p>4.7 Types of biosecurity measures in each market to support supply chain and operating environment.</p> <p>4.8 Significant investment to improve animal welfare in supply chains due to a partnership between Australia and the recipient nation in livestock exports.</p>		AASF	Theme: People, animals and community	Criteria 26; 27; 28; 32; 33; 34
			ABSF	Theme: Best animal care	Indicator: 1.1; 1.2; 1.3; 2.1; 3.1; 3.2; 4.1; 5.1; 5.2; 5.3; 5.4; 5.5
			ASSF	Theme 1: Caring for our sheep	Indicator 1.1.1a; 1.1.2a; 1.1.2b; 1.2.1a; 1.2.3a; 1.2.4a; 1.2.5a; 1.2.6a; 1.2.7a; 1.3.2a; 2.1.1a; 2.1.2a; 2.1.2b; 2.1.3a
			ADSF	Commitment 3: Providing best care for all our animals	Metric 7.1.1; 7.1.2; 7.2.1; 7.2.2; 7.2.3; 7.2.4; 7.2.5; 7.2.6; 7.2.7; 7.4.1; 7.4.2; 7.4.3
Waste reduction and responsible production consumption	 <p>5.1 Feed source from agricultural by-products used to produce livestock in feedlots.</p> <p>5.2 Other materials sourced from recycled and repurposed products used in feedlots</p> <p>5.3 Describe the type of waste from feedlot operations is used, and quantities.</p>		UN SDGs	Goal 12: Ensure sustainable consumption and production patterns	Indicator: 12.3.1a; 12.3.1b; 12.5.1
			SAFA	Dimension: Environmental integrity	Indicator: E5.1.1; E5.1.3; E5.1.4; E5.3.1; E5.3.2; E5.3.3; E5.3.4

THEME	INDICATOR	ALIGNED SUSTAINABILITY FRAMEWORKS INDICATOR #			
	5.4 Describe the differences in how animal by-product are used in destination markets versus within Australia.		SAI	Topic: Resources and markets	N/A
			GRI	Topic 13.8: Waste	Disclosure 301-2a; 306-2a; 306-2b; 306-2c; 306-4a; 306-4b; 306-4c; 306-4-c; 306-4e
			AASF	Theme: Environmental stewardship	Criteria 13; 14; 15
			ABSF	Theme: Environmental stewardship	Indicator 12.1
			ASSF	Theme 2: Enhancing the environment and climate	Indicator 3.2.3a
			ADSF	Commitment 4: Reducing environmental impact	Indicator 11.1; 11.2; 11.3; 11.4; 11.5
Partners in international development	 <p>6.1 Formal agreements between Australia and destination countries relating to both development and the livestock export industry</p>		UN SDGs	<p>Goal 2: End hunger, achieve food security and improved nutrition and promote sustainable agriculture.</p> <p>Goal 4: Ensure inclusive and equitable quality education and promote lifelong learning opportunities for all.</p>	<p>Indicator 2.a.2</p> <p>Indicator 4.b.1</p>

THEME	INDICATOR	ALIGNED SUSTAINABILITY FRAMEWORKS INDICATOR #			
				<p>Goal 8: Promote sustained, inclusive and sustainable economic growth, full and productive employment and decent work for all. Indicator 8.a.1</p> <p>Goal 9: Build resilient infrastructure, promote inclusive and sustainable industrialization and foster innovation. Indicator 9.a.1; 9.b.1</p> <p>Goal 17: Strengthen the means of implementation and revitalize the Global Partnership for Sustainable Development. Indicator 17.2.1; 17.3.1; 17.7.1</p>	
			SAFA	N/A	N/A
			SRI	Topic: Communities	N/A
			GRI	N/A	N/A
			AASF	N/A	N/A
			ABSF	Theme: Economic resilience	Indicator 16.1; 16.2

THEME	INDICATOR	ALIGNED SUSTAINABILITY FRAMEWORKS			
		INDICATOR #			
			ASSF	Theme 4: Ensuring a financially resilient industry	Indicator 9.1.2a; 9.1.2b; 9.1.2c
			ADSF	N/A	N/A

2.3 Data collection

Data was sought to match the developed indicators, which included:

- Identifying data sources relevant to measuring the industry's performance against the identified sustainability frameworks, principles and goals for a minimum of four key markets
- Engaging with stakeholders, particularly LEP in-market managers, to gather and validate data for four key markets
- Addressing data accuracy and quality issues, ensuring reliability
- Analysing collected data to measure the industry's contributions to the sustainability frameworks, principles and goals
- Documenting specific metrics, providing quantitative and qualitative evidence of the industry's impact for a minimum of four key markets.

Data sources used to compile information against indicators included:

- Direct communication with LEP in-market managers
- Company reports (importers of livestock)
- Industry reports
- Government reports from Australia and importing countries, and other countries (e.g. USA)
- Media articles
- Australian Bureau of Statistics, including paid data production
- Food and Agriculture Organisation of the United Nations data (through FAOSTAT)
- Social media.
- Exporters and other stakeholders involved in the industry were also contacted during the data collection process.

3. Results

3.1 Economic development

3.1.1 Direct economic value generated by supply chains

To get an estimate of direct economic value, the overall estimated revenue generated by Australian livestock in destination markets was calculated by using the number of animals imported, their actual or estimated weight, and reported data on wholesale prices in country. This revenue would be distributed to costs and profit/loss. There was some published data in some markets on the cost breakdown of livestock related businesses, but not the type of business that handle Australian livestock, or the data was too old to be considered.

Indonesia

The feeder cattle industry is a crucial component of Indonesia's agricultural sector, significantly contributing to local economic and social development through multiple avenues, including income generation (Liu, et al., 2023).

The average number of Australian feeder cattle exported annually from Australia to Indonesia between 2020 and 2024 was 416,739 (ABS, 2024). The saleable beef can be estimated by multiplying the live weight at slaughter (after fattening in feedlots) by a dressing percentage of 55% and a saleable meat yield of 73% (English, 2011; McKiernan, et al., 2007). This is a useful way of comparing the contribution of cattle imported live compared to boxed beef imports. At an estimated average of 500 kg per head after fattening, the five year average would amount to 208,370 tonnes liveweight, carcass weight of 114,603 tonnes, and meat yield of 83,660 tonnes per annum.

The figure for meat yield includes bones normally sold as part of the meat, such as ribs and shin, but excludes long bones, which comprise approximately 17% of the carcass weight, and fat, which accounts for around 9%. These figures also exclude offal, which typically represents around 4% of liveweight and is readily consumed in Indonesia, with per-capita offal consumption estimated at approximately 1.97 kg per person. Offal has a strong market value, estimated at around 40% of the value of lean meat (Tenrisanna et al., 2015). In addition to live cattle exports, Australia is Indonesia's leading supplier of boxed beef offal, increasing its market share to almost 80% in 2023–24 and reaching a record export volume of 2,541 tonnes. Tongue is particularly popular in Indonesian cuisine and represents 52% of Australian beef offal exports to Indonesia, followed by heart (15%) and lungs (12%), which are commonly used in dishes such as Paru Goreng (deep-fried beef lungs) (MLA, 2025a). For the past five years, the average daily price of beef per kilogram in modern markets across several provinces in Indonesia has been relatively stable. This is mainly due to Indonesian Government policies that cap meat prices. In December 2024, the retail price of beef was recorded at 130,000 Indonesian rupiah/kg (approx. A\$12.57), beef carcass per kg was 90,000/kg (approx. A\$8.70) and slaughter steers were priced at A\$4.46 per kg live weight (Patching, 2024a).

Using 2024 values for estimated value at live weight of A\$4.46 per kg, the estimated value at slaughter of a steer imported as a feeder from Australia and slaughtered at 500kg about would be $500 \text{ kg} \times \text{A\$4.46} = \text{A\$2,230}$ per head. For the five year average of 416,739 cattle, this amounts to an annual total gross wholesale revenue of about A\$929M. How this revenue is distributed across employee wages and benefits, payments to capital providers, operating costs, government contributions, and community investments depends on the operating structure of each feedlot in Indonesia. Modelling this distribution is beyond the scope of this project. However, relative production costs of a feedlot across the Indonesian provinces of Banten, Lampung and West Java have been analysed in the past (Paramecwari, 2015).

All provinces spent ~90% of production costs on purchasing the feeder cattle, 6% on feed and 3% on labour costs. These figures do not include port, unloading and transport costs to get feeders from the ships to the feedlots (Soedjana, et al., 2012).

Vietnam

The saleable beef from cattle exported to Vietnam from Australia can be estimated by multiplying the live weight at slaughter in tonnes exported, by a dressing percentage of 55% and a saleable meat yield of 73% (English, 2011; McKiernan, et al., 2007). The average number of slaughter cattle exported to Vietnam from Australia between 2020 and 2024 was 146,607 with an average liveweight of 470 kg. (ABS, 2024). This equates to 37,898 tonnes carcass weight and a beef yield of 27,665 tonnes. The wholesale price for beef in Vietnam in October 2023 was approximately 205,000 Vietnamese Dong or A\$13.00/kg (Patching, 2023). Therefore, in 2023 the approximate wholesale revenue generated from Australian slaughter cattle exported to Vietnam was A\$360m. However, this does not include the value of offal and other parts of the carcass which command a higher value than they would in Australia.

Kuwait

An estimate of the value generated by the export of live sheep from Australia to Kuwait can be made by estimating the dressed weight of the sheep from livestock export gross weight figures and multiplying this by the wholesale price for sheep meat in Kuwait. The average number of sheep exported to Kuwait from Australia between 2020 and 2024 was 278,170 at an average liveweight of 53 kg. The dressing percentage for shorn Merino ewes and wethers is approximately 48% and the saleable meat yield is 69% of carcass weight (Hopkins and Fogarty, 1998). The five year average carcass weight would therefore be 8,109 tonnes and a saleable meat yield of approximately 5,919 tonnes of meat, not including offal, bone or body fat. The value of meat per kilogram in 2025 was 1.71 Dinar, or A\$8.71 (Index Mundi, 2025). Multiplied by the saleable meat gives an approximate value of A\$52m. These figures exclude the value of offal and any other parts of the carcass.

China

Information on direct economic value generated by the supply chains for Australian dairy cattle to China was not discovered. The live export of dairy cows has contributed significantly to the viability of the Australian dairy industry (BDO Econsearch, 2022; MLA, 2024b), but this is more difficult to quantify for China.

As an estimate, the approximate number of Australian cattle being milked in Chinese dairies at any one time is 250,000, based on historical export numbers and an average productive life of four years. The other factor that is difficult to estimate is the contribution of the progeny of Australian-derived dairy cows to the whole Chinese dairy population, which was estimated in 2023 at about 11.6 million with 7.1 million in active lactation (Huld, 2024). Since Australia exported over a million dairy cows between 2003 and 2023, that contribution will have been substantial.

Milk production statistics use weight and not volume for consistency, as volume changes with milk composition and temperature. Total production is therefore 250,000 animals multiplied by 6,000 kg per animal (Statista, 2024) which is 1.5 million tonnes. Given a wholesale price of 2.6 yuan/kg (Nutrinews, 2024), revenue generated would be 15,600 yuan/head/year. Each animal contributes an estimated output of A\$3,545.45 per head annually. With 250,000 Australian dairy cattle in production at any given time, this results in a wholesale economic output of approximately A\$886 million per year.

Because of the exceptionally high number (126,045) imported from Australia in 2022, there are likely to be up to 309,000 Australian-born dairy cows being milked in China in 2025, but this number will decline in coming years as import numbers were reduced to 47,997 in 2023 and 52,599 in 2024.

How this revenue is apportioned to employee wages and benefits, payments to providers of capital, operating costs, payments to government and community investments would depend on the operating structure of each individual dairy and is beyond the scope of this project to estimate.

3.1.2 Total employment

Indonesia

In 2003, a collaboration between APFINDO and the IPB Development Study Centre estimated the number of workers employed in an average feedlot to be 39 per 1000 head of imported cattle, as shown in [TABLE 5](#) (IRSA, 2009). Although this information is dated, the figures quoted below provide a solid indication of the workforce requirement per 1000 head of cattle in the absence of more recent studies.

TABLE 5. Workforce requirement per 1000 cattle in Indonesian feedlots

ROLE	WORKER REQUIREMENT RANGE	WORKER REQUIREMENT AVERAGE
Handling and feeding	23-37	18.69
Feedmill	5-20	7.79
Waste	4-9	4.05
Supervision/ management	6-7	4.05
Support	6-9	4.67
Total		39.25

The APFINDO report (IRSA, 2009) stated that, following the consolidation of 55 smaller feedlot companies into 14 large ones due to the 1997 Asian currency crisis, Indonesian feedlots in 2009 had a capacity of 617,000 head. The number of cattle under feed is not consistent throughout the year due to supply factors and periods of high demand such as religious holidays. With 537,274 cattle imported from Australia in 2024 and an average feeding time of 100-120 days, the APFINDO employment figures suggest that at least 8,500 Indonesians would be employed to look after these Australian cattle in the feedlots.

A more comprehensive analysis would need to quantify the number of workers upstream and downstream of the feedlot industry, including input suppliers, transport and others.

Vietnam

Livestock production in Vietnam plays an important role in socio economic development, producing food and generating employment in rural areas (Han, 2022). To estimate the number of people employed in the supply chain would require analysis of how many people are employed per head of cattle in abattoirs that receive Australian cattle. These establishments would necessarily be approved through ESCAS, so could differ in their employment characteristics to non-ESCAS facilities.

More complex modelling would be necessary to estimate the number of people employed across the supply chain surrounding Vietnamese abattoirs, including upstream suppliers and downstream processors, transport and retail.

Kuwait

There is no specific information available for slaughter sheep exported from Australia to Kuwait.

China

Data on employment in the Chinese dairy industry directly linked to Australian livestock was not found. However, based on staffing ratios observed in large U.S. dairy farms, where approximately one employee is required for every 80 to 100 cows (Douphrate et al., 2013), we can reasonably assume a similar or higher ratio applies to modern Chinese dairies. Given an estimated 250,000 milking cows in China at any one time, this suggests that between 2,500 and 3,125 people may be directly employed in dairy operations. In addition to on-farm labour, substantial employment is also generated across the broader dairy economy, including fodder production, animal health services, transport logistics, and retail marketing.

3.1.3 Age and gender of workers

There is no centralised dataset recording the age and gender of workers employed specifically in the handling, processing, or marketing of Australian livestock in destination countries.

3.1.4 Infrastructure investment

ESCAS has led to substantial infrastructure development in recipient countries, particularly in feedlots, abattoirs, handling facilities, and traceability systems (for example, in the case study below). These investments are often required to meet ESCAS standards and involve both capital upgrades and ongoing maintenance.

Infrastructure investment was particularly difficult to quantify, even though it can be clearly seen in each country. While the impact is visible across markets, quantifying infrastructure investment proved challenging. The difficulty lies in consolidating long-term capital data across facilities of varying age, scale, and ownership. No practical method was available to collect consistent data over extended periods, especially given the differences between facilities.

Indonesia

There is no specific information available for feeder cattle exported from Australia to Indonesia.

Vietnam

There is no specific information available for slaughter cattle exported from Australia to Vietnam.

Kuwait

While comprehensive data on infrastructure investment in Kuwait's sheep industry specifically tied to Australian livestock was limited, some relevant examples were identified. Notably, a case study on capital investment is included below, illustrating infrastructure development that supports Australian sheep exports to Kuwait.

Case study of capital investment by Al Mawashi/Kuwait Livestock Transport and Trading Co, a vertically integrated supply chain

Al Mawashi, established in Kuwait in 1973, plays a central role in enhancing food security and livestock infrastructure across the Gulf region. The company was founded to secure a reliable supply of quality meat, invest in international livestock trading, and facilitate the transport of sheep and cattle from Australia and other countries. Its operations are closely linked with the government-owned Kuwait Livestock Transport and Trading Company (KLTT), which functions as the country's sole importer of Australian sheep. Imports are conducted through KLTT's Australian subsidiary, Rural Exports and Trading (WA) Pty Ltd (RETWA).

KLTT's vertically integrated supply chain enables end-to-end management of livestock movements, with ownership of a pre-export quarantine facility near Perth and dedicated livestock vessels. Approximately 40% of sheep exported by RETWA are directed to the recently upgraded Al Mawashi feedlot in Kuwait. In addition to supplying the local market, Al Mawashi distributes Australian sheep to neighbouring countries including Qatar, the United Arab Emirates, and Oman.

The Kuwait-based feedlot features significant infrastructure investment aimed at improving animal welfare and operational efficiency. Pens are equipped with shade, mist cooling systems, and fans—important adaptations to Kuwait's dry climate, where daytime temperatures are high but typically drop overnight. Further downstream, Kuwait also maintains holding yards with capacity for up to 300,000 sheep.

Livestock are trucked from these yards to a newly constructed abattoir, located approximately 20 minutes away. Purpose-built for KLTT in 2019 at a cost of A\$70 million, the facility meets Australia's ESCAS requirements and reflects international best practice in animal handling and processing. With a processing capacity of 18,000 head per day, it handles not only Australian livestock, but animals sourced globally (Sheep Central, 2018; Al Mawashi, 2019).

Post-slaughter, Australian meat is sold through Al Mawashi's extensive domestic retail network or via its home delivery service. In 2016, the company launched a mobile app to support consumer access, offering a streamlined ordering experience (MLA and LiveCorp, 2019; Al Mawashi, 2023; Hodges, 2024). Al Mawashi also provides catering and meat supply services to major events across Kuwait and the UAE. Its product diversification and consistent quality reinforce the company's ambition to be the region's most trusted provider of Halal meat products (Al Mawashi, 2023).

The abattoir was designed to meet ESCAS requirements, reflecting the influence of Australia's livestock export standards in shaping welfare-aligned supply chains that support regional food security, economic development, and infrastructure improvements in importing countries.

China

There is no specific information available for dairy cattle exported from Australia to China.

3.2 Capacity building

3.2.1 Type and scope of capacity building programs implemented, and assistance provided for upgrading industry participant skills

Indonesia

Capacity building initiatives have been crucial in enhancing the skills and knowledge of Indonesian stakeholders in the cattle industry. There are several programs that have been run in partnership between Indonesia and Australia.

One of the key initiatives supported by the LEP is Forum Animal Welfare Officers (FAWO), a collaboration with importers, GAPUSPINDO and exporters. The vision of this organisation is to ensure animal welfare in the Indonesian cattle industry. It has been operational since 2012 and has conducted many training events in animal welfare, traceability and slaughter techniques (*AWO Indonesia, 2025*).

Information on training initiatives supported by the LEP in Indonesia was provided by the LEP Indonesia Manager Livestock Services. This can be found in [TABLE 6](#).

TABLE 6. Training initiatives supported by the LEP in Indonesia

TRAINING	NUMBER OF PARTICIPANTS	TIMEFRAME	NOTES
Animal Welfare Officer preparation training Pelatihan Persiapan Sertifikasi AWO (PPSAWO)	5,779 (24 sessions)	2021-2024	6 online training sessions annually to cover 16 competency units as per Indonesia Accreditation Profession (BNSP) scheme
Animal Welfare Officer competency certification	197 (6 batches)	2021-2025	Assessment of the 16 competency units as per Indonesia Accreditation Profession (BNSP) scheme
Animal Welfare Training	639	2021-2025	Includes in house stunning and other animal health and welfare topics
Halal supervisor training	102 (4 batches)	2021-2025	Training certificate only
Halal slaughterman training and competency certification	118 (6 batches)	2021-2025	Training and competency certification
Animal welfare and wellbeing workshops and necropsy training	356	2022-2023 (20 sites)	Necropsy techniques to support diagnosis
Train the trainer for animal welfare	20	2022-2023	Training based on the standard operating

TRAINING	NUMBER OF PARTICIPANTS	TIMEFRAME	NOTES
officers			procedure for animal welfare training modules developed by LEP
Biosecurity support project	337 (22 feedlots and 11 abattoirs)	2022-2025	This program was run by Ausvet (Ausvet, 2022)
Supply chain efficiency Mark IV review and maintenance training	574 (46 facilities)	2021-2024	This relates to a new animal restraining device
Workshops on animal welfare, biosecurity, FMD and LSD	400	2024-2025	Participants were animal welfare officers, abattoir workers and local government officials
DAGING Sapi Kita – Beef Awareness Program	2,267	2022-2024	Promotion and market development for locally processed beef of Australian origins
Halal support project	392	2023-2024	
Workshops, seminars, webinars	3,298	2021-2025	Various events relating to animal health and welfare topics

In addition to the training above, activities from 2015 to 2020 included breeding seminars, nutrition training, animal handling training onsite and seven forums for animal welfare officers, with 7,029 participants.

Northern Territory Cattlemen’s Association (NTCA) Indonesia Australia Pastoral Program (NIAPP)

The NIAPP provided training for Indonesian university students in cattle management on Australian pastoral properties, including technical skills in animal health, welfare, breeding systems, and cattle handling (Red Meat Partnership, 2019). The Northern Territory (NT) Government funded a pilot in 2012, and the NT and Federal Governments funded the first program in 2013. Funding was then provided by the Indonesia–Australia Partnership on Food Security in the Red Meat and Cattle Sector (a 10-year collaborative assistance program from 2013 funded by the Australian Government, usually known by the shortened name “the Red Meat Partnership”). In 2020 and 2021, the program was cancelled due to the COVID-19 pandemic; however, it resumed in 2022 and 2023. It finished when the Red Meat Partnership came to an end.

Participation rates in these training programs have been high, with a diverse demographic profile of participants in terms of age and sex. For example, the last cohort of the NIAPP had a 50:50 male-to-female ratio, with participants from 32 Indonesian universities across 11 provinces. Scholarships provided by Australia relating to livestock exports further support capacity building efforts, enabling Indonesian students and professionals to gain valuable knowledge and experience.

This program aimed to bring 20 Indonesian students to the NT for up to 10 weeks (comprising two weeks training from CDU, NT Department of Primary Industry, and NTCA) and eight weeks on cattle stations. In some years the period on station had to be shortened because the students could not start before the start of the dry season and had to be home by Ramadan which came forward by about three weeks each year. It is estimated that at least 180 students participated over nine years.

Approximately 10 NT (and sometimes northern Western Australian (WA)) stations participated each year, comprising both company and family properties. Students came from a range of Indonesian universities and there was considerable competition for places. For example, in 2022, 32 universities expressed an interest but only 14 could be accommodated. As part of the program in later years, reciprocal visits were made by young staff or family members from the NT stations, which also helped to cement relationships and understanding. Recently an alumni organisation was set up to keep up interaction with students who had been on the program and were now entering the workforce.

Processing Work Program

The Processing Work Program aimed to improve standards and efficiencies in Indonesian abattoirs through skills training and the development of Standard Operating Procedures (SOPs). The skills training was delivered by TAFE Queensland Southwest (TQSW) to 16 trainees from five Indonesian abattoirs, covering meat production, processing, and supply chain management. The SOP training gathered important insights, showing local abattoirs opportunities for improvement in their SOPs, food safety measures and QA systems (Red Meat Partnership, 2024).

Australia Awards Short Courses

The Australia Awards Short Courses provide a flexible and responsive alternative to traditional scholarships, enabling Indonesian professionals to enhance their skills and contribute to organisational development. These short-term programs, delivered by reputable Australian institutions, cater to decision-makers and influencers seeking to develop new skills and expand their networks. Key features include specialised training, flexibility for busy professionals, networking opportunities, and support for pre and post course activities, including mentoring for individual or group development projects. Participants receive comprehensive support, including travel, accommodation, tuition fees, and insurance. The program emphasises practical application through the implementation of individual or group projects aligned with organisational needs. For example, the Skills Development Program Short Courses Phase 1 (2015-17) trained 142 Indonesians in various short courses covering the entire supply chain, including producer, processor, and policy courses.

The Animal Husbandry and Cattle Production Australia Awards Short Course was particularly relevant to the cattle breeding program (Australia Awards Indonesia, 2017). It included 30 participants from 15 provinces across Indonesia, representing smallholder systems, state-run animal production facilities, and large commercial enterprises. The course covered topics such as:

- Drivers of livestock markets, market transactions, and value chains
- Measuring performance (key performance indicators)
- Farm management, livestock production and management, and whole farm planning in tropical and sub-tropical environments

- Innovation platforms, genetics and breeding, animal health management, reproduction, cattle nutrition and feed management, on-farm biosecurity, and animal welfare and livestock export.

Participants spent six weeks in Australia, working and interacting with a wide range of commercial enterprises, industry bodies, service providers, and other stakeholders involved in the Australian cattle industry. They also undertook work placements at the Queensland Agricultural and Training Colleges' commercial operations in Longreach and Emerald. The University of New England facilitated the course and noted the significant motivation and high academic calibre of participants (Australia Awards Indonesia, 2017). The Animal Husbandry and Cattle Production short course has been replaced by a Pasture Feed and Water Management Course of Improved Dairy Production starting in 2025.

Vietnam

Australia has been a major supporter of professional development in Vietnam in a wide variety of fields including livestock management. In 2018-19, the Australian Government, through its Aus4Skills program, supported Vietnamese abattoir managers and workers to develop technical skills required for high quality abattoir and meat processing facilities and higher value chilled beef products. This program was designed in partnership with MLA.

The MATES project, delivered in 2018, focused on developing and implementing hygiene quality assurance and quality control systems for chilled beef in Vietnam. This comprised two workplace training courses, focused on enhancing the skills and knowledge of workers in Vietnamese abattoirs (three months), and a short course on abattoir management to improve management understanding and practices within abattoirs (six months). The follow-up MATES Plus project in 2019 supported a small number of selected Vietnamese suppliers to develop and implement hygiene Quality Assurance/Quality Control systems for chilled beef over 12 months.

The NT Government has also maintained a close relationship with the Vietnamese feedlot industry since the first shipment of feeder cattle in 2013, conducting regular technical and high level trips to Vietnam and hosting regular technical exchange visits in the NT. The assistance provided by the NT primarily covered design of feedlot facilities and rations, assistance with logistics and design of port infrastructure for companies and regions planning to enter the livestock industry, and 'after-sales service' to companies importing NT cattle. A considerable amount of technical assistance to new Vietnamese livestock companies has also been provided by Australian exporters.

Kuwait

Australian input into training and developing capacity of individuals within Kuwait is significant, and common across the livestock export industry. The Australian red meat sector, via MLA and the LEP, proactively invest in training opportunities including animal welfare practices, slaughtering, meat processing/butchering to ensure skilled handling and care of sheep. The LEP publishes materials that relate to livestock handling in the Middle East (Livestock Export Program, 2008).

China

There are opportunities for China and Australia to share information and build capacity in the areas of dairy genetics, and prevention and control of dairy cow diseases, with specific mention of FMD, brucellosis and tuberculosis (Fell, 2019). There is no specific information available on capacity building programs in China for the dairy industry to support Australia's livestock exports there, although there would be non-formal information transferred between exporters and importers.

3.2.2 Participation rate in training, and demographic profile (age and sex)

Indonesia

NIAPP Program

The participation rate in training can be seen in [TABLE 6](#) and the discussion above. The gender split was even for the NIAPP program, but no data was discovered for other programs.

Strengthening smallholder resilience in Indonesia project

Australia's livestock export industry, through LiveCorp, partnered with the Indonesian Society of Animal Science (ISPI) to support smallholders and improve LSD vaccination uptake. Following a scoping study that identified communication gaps and vaccine hesitancy, the project delivered targeted information, village vaccination events, and training for local agencies. ISPI's engagement model reached over 100 government vets and farmers across four provinces, directly contributing to the vaccination of approximately 2,100 cattle (LiveCorp, 2024). ISPI (2023, unpublished) recorded that the total of 686 individuals attended and received training (604 men, 82 women). This included but was not limited to 503 smallholder farmers, in addition to government officials and local animal health officers (LiveCorp, 2024).

Vietnam

MATES program had a total of 76 participants (9 women, 67 men). The total funding for the MATES program was approximately \$950,000 over two years. No age data was given.

Kuwait

There is no specific information available for slaughter sheep exported from Australia to Kuwait.

China

There is no specific information available for dairy cattle exported from Australia to China.

3.2.3 Scholarships provided by Australia relating to livestock exports

Indonesia

As can be seen above, several scholarships have been awarded to Indonesian workers and students by Australia, including those listed in [TABLE 7](#).

TABLE 7. Scholarships awarded to Indonesian students by Australia

PROGRAM	NUMBER OF STUDENTS
NTCA Indonesia Australia Pastoral Program	180
Processing Work Program TAFE Queensland SW	16
Australia Awards Short Courses	142
Animal Husbandry and Cattle Production Australia Awards Short Course	30

Vietnam

Since 1973 over 7,000 Vietnamese professionals have received Australia Awards Scholarships for training in Australia (DAFF, 2025c). Most of the training supported by Australia for the Vietnamese cattle industry has focused on improved animal welfare and abattoir management, but there are no specific figures available on the number of scholarships directly relating to livestock exports.

Kuwait

There is no specific information available for slaughter sheep exported from Australia to Kuwait.

China

There is no specific information available for dairy cattle exported from Australia to China.

3.3 Food security, health and nutrition

3.3.1 Food volumes delivered to market through livestock exports in each recipient country:

Indonesia

As stated in the section on Economic Development, using the five-year average from 2020 to 2024 of 416,739 feeder cattle exported from Australia to Indonesia (Figure 2), and an estimated liveweight of 500 kg per head after fattening, this equates to a total liveweight of approximately 208,370 tonnes. Applying standard conversion assumptions, this results in an estimated carcass weight of 114,603 tonnes and a meat yield of 83,660 tonnes. The figure for meat yield includes bones normally sold as part of the meat, such as ribs and shin, but excludes long bones, which comprise around 17% of carcass weight, and fat, which accounts for approximately 9%. These figures do not include offal. Offal typically represents around 4% of liveweight, equivalent to approximately 20 kg per animal, or an estimated 8,335 tonnes of offal from the cattle imported over this period. At an estimated per-capita offal consumption rate of 1.97 kg per person per year, this volume alone would be sufficient to supply offal consumption for approximately 4.2 million people. Based on a per-capita beef consumption rate of 3 kg per year (MLA, 2025a), the meat component would account for the annual beef consumption of approximately 27.9 million Indonesians, or around 9.8% of the population, estimated at 284.4 million people (BPS Statistics Indonesia, 2025). Vietnam

The five-year average from 2020 to 2024 of slaughter cattle exported from Australia to Vietnam is 146,607 with an average liveweight of 470 kg. Assuming carcass weight is 55% of live weight, and meat yield is 73%

of carcase weight (English, 2011; McKiernan, et al., 2007), the annual average meat yield would have been approximately 28,000 tonnes.

At a consumption rate of approximately 9 kg per capita per year (Nguyen, 2024), imported Australian cattle supplied enough beef to meet the annual dietary needs of around 3.1 million Vietnamese. This figure peaked in 2015, when imports reached 352,604 head, yielding enough meat to satisfy the annual beef consumption of approximately 6.2 million people. Given Vietnam's population of 101 million as of April 2024 (Socialist Republic of Vietnam, 2025), this equates to feeding approximately 6.14% of the national population through Australian beef imports in that year.

Kuwait

The average number of sheep exported from Australia to Kuwait in the five year period from 2020 to 2024 was 278,170 at an average liveweight of 53 kg. If an estimate is made of dressing percentage of 48%, then total carcase weight would be 7,785 tonnes. If saleable meat yield is 69% of carcase weight (Hopkins & Fogarty, 1998), then the total amount of saleable meat would be 5,919 tonnes. Given per capita consumption per annum of approximately 14.4 kg/capita/year (MLA, 2025c), then imported Australian sheep provided enough meat for around 411,000 Kuwaitis - representing 8.47% of the national population in 2023. At the peak of the trade in 2002, when 1,568,897 sheep were imported from Australia, this would have met the consumption of 2.3M Kuwaitis, or 47.39% of the population. The population of Kuwait in 2023 was 4,853,420 (World Bank, 2025).

China

Data for the number of dairy cattle imported by China from Australia is given in **FIGURE 11**. Over one million dairy cattle have been exported from Australia to China over the last 24 years and, along with New Zealand, it is the main supplier of dairy heifers. The Chinese dairy herd has now grown to 11 million, many of which would be the offspring of dairy cows imported from Australia.

As mentioned in the section on "Economic development" a conservative estimate of milk produced from Australian dairy cattle in China is 1.5 million tonnes per annum. At 42kg per person this is enough milk for 35.7M Chinese people. Given China's population of 1.146 billion in 2025 (United Nations Population Fund, 2025), this equates to feeding approximately 3.12% of the national population through Australian-sourced dairy production.

3.3.2 Describe the contribution of livestock exports from Australia on food security or the food system in the recipient country

The food security of a country may not depend solely on livestock imports from Australia, but these imports do become part of the country's food production system, which is ultimately linked to food security.

Indonesia

On a global scale, Indonesia's annual per capita meat consumption remains relatively low at approximately 20.2kg, with beef making up 2.99 kg (15%) of that total (MLA, 2025a). However, beef is an important component of the Indonesian diet, particularly within Muslim communities (Susilo & Suhardi, 2022). Consumption is forecast to grow by 1.3% annually through to 2028, making Indonesia the fastest-growing region for beef consumption globally (MLA, 2025a). This growth is largely driven by the rise in affluent households across the country, particularly in Java, home to over 50% of Indonesia's population and responsible for approximately 70% of national beef consumption (Khoiriyah et al., 2024; MLA, 2025a).

Food security is a major priority of the Indonesian Government. A significant new initiative is the Free Nutritious Meal (MBG) program, a flagship initiative of the Prabowo administration which aims to provide free meals to millions of Indonesian school children to reduce the rate of stunting (Cabinet Secretariat of the Republic of Indonesia, 2025).

As of 2024, Indonesia produces approximately 64% of its domestic beef supply—an increase from 45% in 2018 (Kusumaningrum et al., 2024; Agus & Widi, 2018). Data from Indonesia’s National Statistics Agency (BPS) shows the national cattle herd grew from around 11 million head in 2010 to a peak of 18.6 million in 2020, before adjusting to 11.3 million in 2024 (LiveCorp, 2024). Although the higher figures were officially recorded, observers—including those in the Australian industry—have noted that sustained high cattle prices and disease outbreaks (FMD and LSD in 2022) likely contributed to a declining breeder herd during that period. This aligns with the APFINDO report (IRSA 2009), which indicated a 0.66% annual decline in herd size. The 2024 revision likely reflects improved data accuracy rather than a sudden drop. In FY2023–24, Indonesia imported 146,040 tonnes shipped weight of boxed beef and buffalo meat (MLA, 2025a). Australia was the leading supplier, providing 49% of this volume, followed by India at 37%. When both boxed beef and live cattle imports are combined, Australia emerges as the largest contributor to Indonesia’s total beef supply after domestic production, playing a critical role in the country’s food system and food security, particularly in the provision of high-quality animal protein (MLA, 2025a).

Indonesia faces significant challenges in meeting its growing domestic demand for beef, balancing the need to keep prices affordable for consumers while supporting the development of a sustainable domestic cattle industry. Regionally, increased demand for animal-source foods has expanded food options and reduced hunger, but it has also contributed to unbalanced diets and diet-related health issues (Khoiriyah et al., 2023). Meeting nutritional needs requires more than just sufficient energy and carbohydrates, it must also include adequate animal protein (Anisa et al., 2017). Protein is essential for human health, supporting the development and repair of muscles, bones, hormones, and enzymes. In addition, beef provides key micronutrients such as iron, zinc, and B vitamins (Rismayanthi, 2006). Improving food security and child nutrition, including through the provision of animal protein, is a clearly stated national priority in Indonesia (Cabinet Secretariat of the Republic of Indonesia, 2025). While Indonesia has demonstrated the capacity to manage intensive production systems such as cattle fattening, it faces significant challenges in breeding cattle. Like many densely populated countries, it lacks the broad-scale rangeland conditions required for efficient breeding, an area where Australia holds a clear advantage (Basyar, 2021).

Vietnam

Australia has become part of the food system in Vietnam through the provision of live cattle for slaughter. Demand and consumption of livestock products increased dramatically in Vietnam between 2010 and 2020. Vietnam’s demand increased faster than any other country in the South East Asian region. Rising population and incomes in Vietnam have led to an increase in demand for food and a change in food preferences (Van Dung, et al., 2020). In Vietnam, the consumption of meat has increased very rapidly since the initiation of market reforms in 1986. Increases in consumption in Vietnam can be attributed to:

- Changes in the systems for provision of meat
- Meat intensification of traditional meals and the import of meat-intensive eating practices from abroad

- Increased prevalence of eating out
- The positive social connotations attached to meat as a symbol of development and progress (Hansen, 2018).

By 2023 the average consumption of beef was 8.73 kg/capita/year (Nguyen, 2024). Vietnam has the highest beef consumption frequency (number of meals involving beef per month) in South East Asia but only the third highest total beef consumption after Singapore and Malaysia (MLA, 2025b). Urban Vietnamese consume more animal products than rural people and the consumption of animal products in Vietnam has increased along with the growth of cities (Han, 2022). Pigs and poultry are the largest source of meat in Vietnam, followed by beef (Hansen, 2018; Han, 2022).

To meet this demand for beef, the domestic cattle herd in Vietnam was estimated as 5-6 million head between 2010 and 2019 (Han, 2022) and 6.3 million head in 2021 (Bui, 2021). However, an accurate picture of cattle supply is complicated by high levels of informal trade from Myanmar, through Cambodia and Laos into Vietnam and sometimes continuing into China. There has also been a recent transition from small scale farms to medium and large farms (Han, 2022). Small-scale neighbourhood slaughtering in urban areas has largely been replaced by larger, centralised facilities located outside city centres. Similarly, the transport of meat by motorbike to wet markets has shifted toward the use of refrigerated trucks delivering to supermarkets and restaurants. As production has scaled up, the supply of meat to supermarkets has increased; however, wet markets have remained resilient and continue to play a key role in meat distribution (Hansen, 2018). According to the Vietnam Livestock Association, local production of bovine meat in Vietnam can only meet 70% of domestic demand. The gap between supply and demand is filled mainly by buffalo meat from India, boxed beef from Australia, and live cattle from Thailand and Australia (Bui, 2021). The largest imports are Indian buffalo meat (22% by value in 2024) followed by Australian beef (8%) and cattle (7%) (Vietdata, 2025), making Australian livestock exports to Vietnam an important part of their food system, and therefore food security.

Kuwait

Red meat is a staple in the Kuwaiti diet, and live sheep imports are a crucial component in ensuring a steady, reliable supply. This helps maintain food security and support the local food industry. The Kuwait food bank also benefits from the reliability of the live sheep trade from Australia, distributing meat to those in need, including vulnerable groups, providing them access to nutritious food. Kuwait's per capita meat consumption is among the highest in the world. Per capita sheep and goat meat consumption was 13.7kg in 2023 and 14.4kg in 2024. Sheep meat consumption is expected to increase across MENA markets, with tourism growth, a young population and higher disposable incomes driving up lamb consumption and import growth (MLA, 2025c). Kuwait has been importing sheep from Australia and other countries since the 1960s (ALEC, 2024). This demonstrates the long working relationship between Australia and Kuwait and the long-established inclusion of imported Australian sheep in the Kuwaiti food system.

Locally slaughtered meat is of significant religious, cultural and social importance to Kuwaitis (Thompson, 2023), making live sheep imports important. Anecdotally, there is often a strong preference for local Halal slaughter, even though these practices are used in halal certified Australian abattoirs to allow for market access into Islamic countries. Australian sheep are preferred for their meat quality, product consistency, biosecurity and health status.

The challenges and considerations regarding the import of livestock were highlighted via an interview in late 2024 (Hodges, 2024) which specifically noted the importance of health status in the value proposition of Australian sheep. This significantly enhances their appeal in the Kuwaiti market compared to other sources where the prevalence of disease is a concern, including Peste des Petits Ruminants (PPR) in

Romania, FMD in parts of South Africa, and Blue Tongue virus in Spain. Australia's disease-free status makes its sheep a preferred choice, offering food safety and supply reliability that align with Kuwait's strict import requirements and consumer expectations, both critical factors in purchasing decisions.

China

Australia has contributed to food security and to the food system in China through its contribution of dairy breeders to the Chinese dairy industry to build the dairy herd size and therefore, contribute to filling the demand for dairy products. China has 9% of the world's arable land and 20% of the world's population. There has been a rapid growth in domestic needs due to changes in diet, mainly in the large cities (Chatellier, 2021). Food security in China has improved, and food consumption has changed. However, China faces current challenges including unbalanced diets, unsustainable use of land and water resources and volatility in the international trade environment. As a result, excess body weight and obesity is an increasing problem in China (Fan, et al., 2023).

The per capita consumption of dairy in China increased from 36 kg (raw milk equivalent) in 2016 to 42 kg per person in 2022, driven by higher per capita incomes and government policies, along with a reduction in custom duties. Comparatively, this level of consumption is low compared to other middle- and high-income countries, being about half that of South Korea and a fifth of the USA and Europe (Chatellier, 2021; Huld, 2024). In northern China, about 20% of residents consume milk and dairy at least once per day, while over half the residents across all regions consume milk and dairy products less than once a week (Academy of Global Food Economics and Policy, 2023). As a result, China had become the world's biggest importer of dairy products, spending 9.7B Euros (A\$17.2B) in 2018 (Chatellier, 2021) and is a significant contributor to the worldwide increase in demand for dairy products.

The increased demand for dairy in China has led to the rapid development of domestic dairy farms over the last two decades with most dairy production in the North East of the country (Fell, 2019). China's *Development Plan for the Milk Industry 2016-20* aimed to restructure the dairy industry and set specific goals for achievement by 2020, including to increase milk production to 41 million tonnes per year (Fell, 2019). To meet this goal, there was an increase in larger dairies, with some containing over 100,000 cattle, a step up from the small-scale dairies traditionally present in China. Supplying the cattle to create these larger operations increased the demand for imported dairy cattle. Over the past 15 years, China has imported 150,000 – 200,000 dairy heifers each year from Australia, New Zealand, Uruguay and Chile to boost the local herd's genetic pool. The importation of dairy cattle from Australia has specifically contributed genetics to increase the volume of dairy product per animal (Fell, 2019).

As a result, in 2021 dairy production reached 39.3 million tonnes from a herd of 11 million dairy cows (Shi, et al., 2023). Improved production efficiency and a larger cattle inventory meant the total cow milk production for China as of January 2023 rose to 41.97 million tonnes (Baych, 2023), effectively achieving the goals from the development plan. Total production in January 2024 was reported as 42.5 million tonnes (Marianetti, 2024) showing that these policies have been effective.

Since 2022, imports of dairy cattle have slowed as herds reached the desired numbers in China (BDO Econsearch, 2022). The importation of dairy products also slowed as China became more reliant on its own herd, although there have been some challenges along the way. For example, costs are rising for dairy farmers in China, and their margin is small, reducing their ability to invest further in expanded production and lessening the demand for imported cattle (ABARES, 2024).

3.4 Animal health and welfare

3.4.1 Describe the activities and practices implemented by the supply chain that effectively promote the health and welfare of animals

The Exporter Supply Chain Assurance System (ESCAS) for Indonesia, Vietnam and Kuwait.

ESCAS was introduced by the Australian Government in 2011 in response to Australia suspending live cattle exports to Indonesia on June 8, 2011, with the ban initially expected to last up to six months. However, it was lifted much earlier—just one month later, on July 6, 2011, (DAFF, 2024b). ESCAS applies to all feeder and slaughter animals in all overseas markets, but not to breeding animals such as dairy cattle, and makes Australian exporters legally responsible for animals they sell right up to the point of slaughter. Key components of the system are:

- **Animal Welfare:** Handling and slaughter of livestock in the importing country must be in accordance with the animal welfare recommendations of the World Organisation for Animal Health (OIE). When applying for an export permit, the exporter must detail all feedlots, depots, transport arrangements and abattoirs that will be used for the animals, and all these facilities must be approved and have demonstrated that they meet the required standard.
- **Control of the supply chain:** The exporter must control all supply chain arrangements including transport, handling and slaughter.
- **Traceability:** The exporter must be able to trace the location of all livestock at all points of the supply chain.
- **Auditing:** The exporter must demonstrate compliance with ESCAS using approved independent auditors.

The *Export Control (Animals) Rules 2021 (Commonwealth)* sets out in detail the process governing the issuance of export permits under the *Export Control Act 2020*. Exporters must have in place a conforming ESCAS to meet animal welfare requirements during the livestock's journey and following arrival in the destination country up to and including the point of slaughter (Chilcott, et al., 2020). Australia is the only country exporting live animals that regulates standards of animal welfare in other countries and invests in training and auditing to ensure those standards are met. An important feature of ESCAS is transparency. For example, the Australian Government publishes quarterly ESCAS Regulatory Performance Reports (DAFF, 2025b). ESCAS has been reviewed independently in 2015, 2018 and 2021 (IGLAE, 2021). A new review is underway for completion in 2025 (LiveCorp, 2025).

While identifying some continuing problems, the 2021 report from the Inspector-General of Live Animal Exports (IGLAE, 2021) acknowledged that ESCAS, and the activities delivered by the LEP in destination markets, have not only lifted the standards and practices that Australian animals are subjected to but has also had a range of benefits to the way in which non-Australian livestock are managed and slaughtered in many of the importing markets.

In 2013, there were seven ESCAS approved exporters with 267 facilities approved and a total of 469 consignments delivered (Department of Agriculture, 2015). In comparison, in 2019, there were 11 exporters with approved supply chains who delivered 81 consignments (Department of Agriculture, Water and the Environment, 2019). As of May 2024, there were 15 Australian exporters with approved supply chains to export to all markets. Of this, 90% of exports were delivered by eight organisations (Patching,

2024b). Because of ESCAS, activities and practices have been implemented by the supply chain that effectively promote the health and welfare of animals. This has seen a great improvement to the animal welfare system for destination countries.

China

ESCAS is not required for dairy cattle exported to China

3.4.2 Number of sheep and cattle processed through an ESCAS accredited establishment

As ESCAS is a legal requirement for all feeder and slaughter livestock exported from Australia, the cumulative totals provided below represent animals that have all been processed under ESCAS-accredited supply chains since the progressive roll out began in July 2011. The following figures are the total number of livestock processed through ESCAS-accredited supply chains in the first half of 2025, and since the introduction of ESCAS.

Indonesia

Between 2011 and 2024, approximately 6,670,000 live cattle were exported from Australia to Indonesia under ESCAS, based on annual totals (**FIGURE 2**). Between 1 January and 30 June 2025, 238,219 cattle were exported from Australia to Indonesia under ESCAS (DAFF, 2025b).

Vietnam

Between 2012 and 2024, approximately 2,200,000 live cattle were exported from Australia to Vietnam under ESCAS, based on annual totals (**FIGURE 5**). The trade increased significantly between 2013 and 2015, before stabilising at lower but still notable volumes. Between 1 January and 30 June 2025, 47,912 cattle were exported from Australia to Vietnam under ESCAS (DAFF, 2025b).

Kuwait

Between 2012 and 2024, approximately 17,900,000 sheep were exported from Australia to Kuwait under ESCAS, based on yearly totals (**FIGURE 7**). Between 1 January and 30 June 2025, 110,403 sheep were exported from Australia to Kuwait under ESCAS (DAFF, 2025b).

China

ESCAS is not required for dairy cattle exported to China.

3.4.3 Number of ESCAS audits undertaken

Indonesia, Vietnam and Kuwait

Independent auditing is one of the main in-country assurance mechanisms for ESCAS (Department of Agriculture, Water and the Environment, 2019). These audits provide evidence for approval of new supply chains and ongoing compliance in existing supply chains. DAFF does not report number of ESCAS audits undertaken.

All alleged non-compliance is investigated by DAFF and reported on its website (DAFF, 2025a). As of August 2025, there had been 195 investigations since the beginning of ESCAS. However, it is important to note that not all reports of non-compliance are upheld - some are minor, some are self-reported by exporters, and

many are proactively identified as part of the system's design. The aim of ESCAS is to identify and address issues early, ensuring continuous improvement and rapid resolution, rather than these investigations being a sign of system failure. This approach supports transparency and ongoing enhancement of animal welfare standards in export supply chains.

3.4.4 Percentage of ESCAS approved abattoirs that use stunning

Indonesia

Substantial effort has gone into promoting stunning in Indonesian abattoirs and, as a result, 90% of Indonesian abattoirs processing Australian-bred cattle are using stunning. In 2024 the LEP RD&E Program introduced a virtual reality training tool to enable new abattoir staff to learn best practice techniques for stunning cattle, which has already been used at many training courses (LiveCorp 2024).

The LEP invested in assisting facilities to move from non-stun to stunning practices from 2020 to 2022, to improve animal welfare standards. As a result, some abattoirs were able to upgrade from a non-stun to a stunning facility, and the premise passed both the Halal and ESCAS audit (Fadma, 2024).

Vietnam

Although the percentage of ESCAS approved abattoirs is not publicly available, the use of stunning is widespread in Vietnam. Originally Australian exporters supplied and paid for captive bolt stunners and cartridges, but most abattoirs now report that they source and pay for the cartridges themselves. Captive bolt equipment and cartridges of satisfactory quality are now made locally in Vietnam (Impetus, 2024).

Kuwait

In Kuwait, stunning is not routinely used in slaughter practices, reflecting religious and cultural preferences for traditional halal methods. While Australia's ESCAS standards require high levels of animal welfare, including the option for stunning, facilities in Kuwait have been purpose-built to meet these standards without the use of stunning. For example, the KLTT-owned abattoir in Kuwait was specifically designed to comply with ESCAS requirements while maintaining local slaughter preferences.

China

This is not applicable to dairy cattle exported from Australia to China.

3.4.5 Describe the programs and animal welfare training supported by Australia that have been undertaken, and how many people have completed them

The animal welfare training conducted by Australia in countries that receive livestock was captured under the theme of capacity building.

Indonesia

For Indonesia, the program for capacity building in animal welfare coordinated by the LEP has been substantial. Over the last five years it has included:

- Animal welfare training – 639 participants. This includes standard operating procedure training onsite or online, in-house stunning training for stunning operators.

- PPSAWO (preparation training for animal welfare officer certification) – 5,779 participants. This includes six online training sessions annually to cover 16 competency units as per Indonesia Accreditation Profession (BNSP) scheme.
- Animal welfare officer competency certification – 197 participants. This is the assessment of the 16 competency units as per the Indonesia Accreditation Profession (BNSP) scheme.
- Mark IV review and maintenance training – 574 participants. Mark IV is a type of cattle restraint that allows slaughter in compliance with both Halal and ESCAS.
- Train the trainer for Animal Welfare Officers – 20 participants. This is for trainers to be able to run the training leading to Animal Welfare Officer accreditation.
- Animal welfare and well-being workshops and necroscopy training – 356 participants. This training was for veterinarians and para-veterinarians for animal welfare, diagnostics, sample handling and necroscopy to support disease diagnosis.

Vietnam

Most of the training funded from Australian sources has focused on animal welfare and improved abattoir procedures. This included the MATES project, delivered in 2018-19 to support enhanced skills in Vietnamese abattoirs and had a total of 76 participants (9 women, 67 men).

Kuwait, China

No information was discovered on programs and animal welfare training for Kuwait and China. Even so, there are Australian exporters working in these markets who have undertaken capacity building activities for people in these destination countries funded under the Livestock Export Collaborative Funding program. Through this program, exporters receive co-funding to develop strategic welfare and productivity improvements in destination markets (MLA, 2025d). These activities are currently commercial in confidence.

3.4.6 Types of biosecurity measures in each market to support the supply chain and operating environment.

Indonesia

The Australian and Indonesian Governments have been working together to strengthen biosecurity measures for the cattle trade, including the development of the Indonesia Biosecurity Support Program to improve the Indonesian feedlot sector's ability to respond to animal diseases such as FMD and LSD (Collins, 2024). This project was jointly funded by DAFF and MLA and implemented by Ausvet with support from MLA and GAPUSPINDO. The project was to help the Indonesian feedlot industry to implement and maintain cost effective and sustainable biosecurity practices in the face of outbreaks of FMD and LSD in 2022. Onsite visits, workshops, webinars and development of high quality technical materials in Bahasa and English were part of this project (Ausvet, 2024). Four million FMD vaccines have also been delivered to Indonesia by the Australian Government since 2022 in response to the outbreak of FMD, highlighting the close relationship between the two countries. The case study below illustrates the partnership between Indonesia and Australia in biosecurity.

Case study – Management of animal health and biosecurity in Indonesia

When FMD and LSD were detected in Indonesia in 2022, the Indonesian Government responded quickly to control their spread. Australia offered support for these efforts due to the strong relationship between the two countries, in part built over many years of livestock imports.

Australian cattle are now routinely vaccinated against FMD and LSD on arrival to maintain their health in an environment where they are naïve to these diseases. This vaccination is provided by importers.

In addition, LiveCorp received Australian Government funding to support the roll out of FMD and LSD vaccines in Indonesia. The program was run in conjunction with local livestock associations ISPI (Indonesian Society for Animal Science) and GAPUSPINDO. The project reimbursed 50% of the cost of vaccination against LSD for Australian cattle in feedlots and 50% cost of vaccination against both LSD and FMD for local livestock. A total of 405,027 livestock were vaccinated as part of the program over 2022-23.

Initially, smallholder farmers around feedlots were reluctant to vaccinate their cattle for fear of adverse reactions in their livestock that could threaten their livelihoods. The project team developed awareness and education materials and held community events to explain the impacts of these diseases and the benefits of vaccination, along with other animal health and biosecurity messages. These events were attended by 503 farmers, along with local government officials, animal health officers and other community leaders, and directly led to the vaccination of 2,400 livestock.

Training was also provided for abattoir and feedlot workers, covering biosecurity practices, animal welfare and traceability, identification and prevention of FMD and LSD, and care and management of infected livestock. 135 people received training from specialist vets, researchers and industry representatives.

This project is a good example of how relationships built over many years of livestock exports to Indonesia led to local buy-in and a flexible approach to ensure engagement and positive animal health and biosecurity outcomes for both Indonesia and Australia (LiveCorp, 2024).

Vietnam

There is no specific information available for slaughter cattle exported from Australia to Vietnam.

Kuwait

RETWA/KLTT's vertically integrated supply chain provides a unique opportunity to strengthen biosecurity management. This comprehensive control over each stage of the supply chain enables the implementation of consistent biosecurity protocols, ensuring the health and welfare of sheep from sourcing in Western Australia through to processing in Kuwait. By leveraging their infrastructure and investment, RETWA/KLTT can proactively monitor, respond to, and mitigate biosecurity risks across borders, enhancing both animal welfare and trade integrity.

China

There is no specific information available for dairy cattle from Australia to China.

3.4.7 Reports of significant investment to improve animal welfare in supply chains due to a partnership between Australia and the recipient nation in livestock exports

Importing countries such as the below have developed infrastructure including yards, feedlots and slaughterhouses to the ESCAS standards required by the Australian regulator for overseas facilities (DAFF, 2024b). As a result, animal welfare standards are high in the importing countries for livestock exported for slaughter because Australian livestock can only be slaughtered in these approved facilities. Slaughter in facilities that are not approved is a breach of ESCAS and can result in additional conditions or restrictions being placed on Australian exporters (ALEC, 2024). The quantum of total investment in facility upgrades and compliance is not known.

The LEP has developed a number of manuals and other documents to support animal husbandry in-market, particular those in South East Asia. The following is a list of examples of some of these materials:

- Tropical beef production manual (MLA & LiveCorp, 2012).
- Standard operating procedures for the welfare of cattle in overseas markets (MLA & LiveCorp, 2012).
- Cattle feedlot treatment guide - A guide to the management and treatment of sick animals in South East Asian feedlots (MLA & LiveCorp, 2010).
- Manual for South East Asian cattle feedlots (MLA & LiveCorp, 2010).
- Manual of designs for the handling and slaughter of cattle, sheep and goats (MLA & LiveCorp, 2018).

Indonesia

In addition to the above, the LEP invested and supported the development of cattle restraining box specifically designed for use in Indonesian abattoirs. This equipment allows operators to humanely restrain and process Australian cattle while maintaining compliance with ESCAS and facilitating Halal slaughter (Beere, 2004) (Beere, 2008) (Beere, 2009) (Stark & Hewitt, 2012) (Paul Troja Felix Domus Pty Ltd; Meatend Pty Ltd; G7B Stainless Pty Ltd, 2020) (Stark Engineering, 2020).

Vietnam

In Vietnam, ESCAS has resulted in significant investments from importation up to the point of slaughter, including abattoirs, holding facilities, unloading ramps, restraint boxes, stunning equipment and equipment to guarantee traceability of cattle (Patching & Coole, 2024). Most of the training funded from Australian sources has focused on animal welfare and improved abattoir procedures. The use of stunning is now widespread. Originally Australian exporters supplied and paid for captive bolt stunners and cartridges, but most abattoirs now report that they source and pay for the cartridges themselves. Captive bolt equipment and cartridges of satisfactory quality are now made locally in Vietnam (Patching & Coole, 2024).

In late 2023, new animal welfare standards were introduced in Vietnam, developed by the Vietnamese Ministry of Agriculture and Rural Development with significant input from the LEP and funding from the Australian Government. The development of the standards involved consultation with national and provincial government officials as well as industry, to ensure practical adoption. A significant driver for the development of these standards was the presence of Australian exporters in destination markets investing in training and working with supply chain partners to improve their practices (LiveCorp, 2025). Vietnam's animal welfare standards also promote the use of stunning for local and Australian-bred cattle. Training in best practice stunning techniques has been aided by an Australian-developed virtual reality tool which allows new abattoir staff to practice stunning virtually before working with live animals (LiveCorp, 2024).

Kuwait

RETWA/KLTT owns facilities from pre-export quarantine yards in Australia and ships, to feedlots, yards, slaughterhouses, processing factories and retail outlets in Kuwait. The vertical integration and investment give a level of control beneficial in managing the welfare of sheep from sourcing and departure in Western Australia through to slaughter in Kuwait.

According to an article published in 2019, approximately 40% of live sheep exported by RETWA from Australia at that time would go into a recently upgraded Al Mawashi feedlot in Kuwait. This features shade covers over pens, mist coolers and fans to support sheep during the hot (not humid) days in Kuwait, where temperatures generally decrease overnight (MLA and LiveCorp, 2019).

The LEP and DAFF invested in the development of a livestock handling guide to improve communication, production and animal welfare in the Middle East and Africa. This guide highlighted the importance of understanding and communicating effectively with animals and understanding international welfare standards and how to deliver them in the context of the Middle East and Africa (Livestock Export Program, 2008)

China

There is no specific information available for dairy cattle exported from Australia to China.

3.5 Waste reduction, and responsible production and consumption

Three out of the four indicators in the following discussion relate to feedlots, which only apply to the Indonesian supply chain in this analysis. The indicator relating to the consumption of offal and bones in overseas markets compared to Australia only applies to Indonesia, Vietnam and Kuwait, and not the Chinese dairy supply chain. The science and practice of developing and using feed rations in feedlots in Indonesia is both complex and varied. It is certain that some products are being used as cattle feed that would otherwise be diverted to waste; however, accounting for that across the industry is unachievable. It is recommended that case studies are regularly produced that show the benefits of the feedlot industry in Indonesia to the use of what otherwise would be waste product, but that no attempt is made to account for it over the entire industry.

3.5.1 Feed sources from agricultural by-products used to produce livestock in feedlots

Indonesia

The science and practice of developing and using feed rations in feedlots in Indonesia is both complex and varied. It is certain that some products are being used as cattle feed that would otherwise be diverted to waste; however, accurately accounting for that across the industry is very challenging. It is recommended that case studies are regularly produced that show the benefits of the feedlot industry in Indonesia to the use of what otherwise would be waste product, but that no attempt is made to account for it over the entire industry.

The majority (95%) of cattle feed used in small Indonesian feedlots is sourced locally and milled on site (MLA, 2011). These products include both plant-based and agricultural by-products, such as palm kernel extract (limited to 20% of the diet because of lipids), copra (after the coconut oil has been extracted), soya meal, gapiék (cassava chips) and onggok (cassava pulp after the starch is extracted), rice bran, pineapple by-products, rice straw, king grass, brewers' grain, wheat bran and pollard, and molasses.

Cassava peel silage, for example, is very profitable and reduces waste of an otherwise discarded by-product (Kusmartono, et al., 2022).

Extensive cassava plantations were established between 2000 and 2010 in anticipation of high demand for ethanol production, but when the price of oil moderated, the waste material became available for feeding to livestock (Willis, 2009). Research findings demonstrate the positive effects of incorporating manufacturing waste into feed rations. For instance, studies have shown that fermented rice straw and concentrate resulted in an average daily gain (ADG) of 1.34 kg in Brahman-Angus-Ongole crossbred cattle and 0.67 kg in Ongole cattle. In contrast, lower ADG values of 0.33-0.34 kg were observed in Bali cattle fed with fermented rice straw supplemented with rice bran, forages, and probiotics (Sugama & Budiari, 2012). Similarly, feeding 40% oil palm frond to Ongole cattle yielded an ADG of 0.829 kg (Sianipar, 2009). While these studies demonstrate the potential benefits of utilising manufacturing waste as livestock feed, further research is necessary to fully realise practical application.

Paramecwari (2015) illustrates through **TABLE 8**, the widely used “onggok” as a waste product of making tapioca starch. Onggok is comprised of fibrous cassava root material and contains considerable quantities of residual starch that cannot be extracted as the tapioca is separated (Paramecwari, 2015). This highly significant energy component is well utilised by ruminant animals.

TABLE 8. Commonly observed Indonesian feedlot finisher rations (Paramecwari, 2015)

	FEED INGREDIENT TYPE	RATION INCLUSION %	PROTEIN %	ENERGY (MJ ME/KG DM)
ROUGHAGES	Chopped grass - Elephant or King (Napier)	10-20	12.5 - 14.0	9.5 - 9.8
	Corn silage or chopped corn forage	10-20	8.5 - 11.0	8.5 - 8.7
	Rice straw	5-8	2.2	3.8
	Corn stover	5-15	5.5	8
ENERGY CONCENTRATES	Dried tapioca pulp (onggok)	20-45	2.2	11
	Dried tapioca chips (gapek)	20-45	3	12.3
	Rice bran	5-15	13.5	11.3
	Wheat bran/pollard	5-15	15	11
PROTEIN MEALS	Kopra meal	5-15	22	11.5
	Palm kernel cake	2-10	16.5	11
	Soybean meal	0-5	51.5	14.8
WET BY-PRODUCTS	Brewers' grain	5-20	25.5	12.5
	Pineapple waste	5-10	7.5	9

	FEED INGREDIENT TYPE	RATION INCLUSION %	PROTEIN %	ENERGY (MJ ME/KG DM)
	Molasses	3-8	3.5	12.5
MINERAL ADDITIVES	Limestone	0.75 - 1.50	n/a	n/a
	Dicalcium phosphate	0.25 - 0.50	n/a	n/a
	Sodium bicarbonate	0 - 0.50	n/a	n/a
	Salt	0.25 - 0.50	n/a	n/a
	Vitamin/mineral premix	0 - 0.10	n/a	n/a
	UREA	0.5 - 1.2	287	n/a
Typical ration analysis	Dry matter (DM)	70%		
	Crude protein (CP)		14.50%	
	Energy (ME)			11.0 MJ ME

Poppi, et al. (2021) concluded that the problem with productivity in smaller Indonesian feedlots is not usually the feed ingredients themselves but the formulation. Achieving consistency in the balance of metabolisable energy and crude protein is challenging due to seasonality of the different locally available feedstuffs. The Australian Centre for International Agricultural Research (ACIAR) therefore funded the preparation of low-cost ration programs that can be used at a village level by feedlots without access to nutritional consultants (Poppi, et al., 2021).

The diets fed in larger Indonesian feedlots seeking maximum growth rates are fairly similar to those fed in Australian feedlots. Most diets are based on maize silage which is purchased from small farmers nearby (Cowley, et al., 2020) thus spreading the economic benefit of the feedlot further than direct employment. GAPUSPINDO estimated in 2020 that over 100,000 Indonesians were employed in the feed, logistics, fattening, processing and selling sectors (Red Meat Partnership, 2020).

Vietnam

There is no specific information available for slaughter cattle exported from Australia to Vietnam.

Kuwait

There is no specific information available for slaughter sheep exported from Australia to Kuwait.

China

There is no specific information available for dairy cattle exported from Australia to China.

3.5.2 Other materials sourced from recycled and repurposed products used in feedlots

Currently, there is no specific information available on how Australia has influenced waste reduction and responsible production and consumption in Indonesia, Vietnam, Kuwait, or China via the live cattle or sheep export industry. This data gap is acknowledged in the report, and it is recommended that future research and case studies focus on this area, as the use of recycled and repurposed materials in feedlots is an important aspect of sustainable livestock production.

Indonesia

There is no specific information available for feeder cattle exported from Australia to Indonesia.

Vietnam

There is no specific information available for slaughter cattle exported from Australia to Vietnam.

Kuwait

There is no specific information available for slaughter sheep exported from Australia to Kuwait.

China

There is no specific information available for dairy cattle exported from Australia to China.

3.5.3 Describe the types of waste from feedlot operations being used, and quantities

Indonesia

Efforts to reduce waste and promote responsible production and consumption are integral to the sustainability of the Indonesian cattle industry (Shamsuddoha, et al., 2023). Farmers in rural areas often manage small feedlots with a few cows, producing waste such as cattle faeces, urine and uneaten feed (Miah, et al., 2022). The total waste from livestock systems can reach up to 15-20 kg per unit per day, with urine production reaching 5.94 litres per unit per day (Willis, 2009). If properly managed, this waste can be an important resource for organic fertiliser and the methane gas produced can be harvested for cooking. However, in Indonesia, as in many countries, the full potential of utilising the waste has not been fully exploited (Hansen, 2024).

Vietnam

There is no specific information available for slaughter cattle exported from Australia to Vietnam.

Kuwait

There is no specific information available for slaughter sheep exported from Australia to Kuwait.

China

There is no specific information available for dairy cattle exported from Australia to China.

3.5.4 Describe the differences in how animal by-product are used in destination markets versus within Australia.

Indonesia

The use of the whole carcass for human consumption in Indonesia is another component of waste reduction. Offal cuts such as tongue, heart, lungs and liver are not often used in Australia but are highly valued in many countries and are therefore exported as part of the meat trade. Better utilisation of not just these cuts, but lower value parts of the animal following slaughter in Indonesia, helps to minimising waste (MLA, 2022).

Vietnam

One of the advantages of exporting live cattle as opposed to boxed beef to Vietnam and other South East Asian countries is the human consumption of every part of the animal. Pha Lau Bo is an example of a very popular Vietnamese dish made from beef offal. While Australian processors pack and export the more valuable types of offal to a wide variety of overseas destinations, the lower value parts are often discarded. For example, hides and feet currently have very little value in Australia and are often discarded, but are used when cattle are slaughtered in Vietnam.

A survey of abattoir development in Vietnam in 2024 reported that the waste disposal infrastructure of most small-scale abattoirs required improvement, with many discharging untreated wastewater into community drainage systems near villages. Most (81%) solid waste (dung, offal, skin, stomach contents etc) is sold to traders, 16% composted as fertiliser and 3% used as fish feed (Patching & Coole, 2024).

Kuwait

There is no specific information available for slaughter sheep exported from Australia to Kuwait.

China

There is no specific information available for dairy cattle exported from Australia to China.

3.6 Partners in international development

During the data collection phase, it was clear that obtaining precise numbers on Australia's varied and extensive aid investment over a long period of time with its trading partners, and with varying connections to the livestock export industry, was a significant task beyond the scope of this project. The number of scholarships awarded relating to the livestock export industry was also difficult to obtain. It was also clear that even though industry exchanges are common, data relating to them over a long period of time was not readily available. However, there are several formal agreements between Australia and destination nations that demonstrate partnerships for mutual development.

3.6.1 Formal agreements between Australia and destination countries relating to both development and the livestock export industry

Indonesia

[The Indonesia-Australia Comprehensive Economic Partnership Agreement \(IA-CEPA\)](#)

The IA-CEPA enhances the economic partnership between Australia and Indonesia, reducing tariffs on live male cattle exports from Australia to Indonesia (MLA, 2022). Under this agreement, in 2022 Australia had an access quota of 621,920 head of male cattle at a 0% tariff rate. At the time, volumes were expected to expand around 4% per year to reach 700,000 head (MLA, 2022).

[ASEAN-Australia-New Zealand Free Trade Agreement \(AANZFTA\)](#)

Under the AANZFTA, Australian cattle benefit from a zero-tariff rate when exported to member countries such as Indonesia. This preferential access significantly enhances the competitiveness of Australian livestock in Southeast Asian markets, reducing costs for importers and supporting the continuity of trade relationships (Bui, 2021). The zero-tariff provision is part of AANZFTA's broader commitment to progressive tariff elimination, which began in 2010 and reached full implementation for most tariff lines by 2020. For livestock, this has translated into greater market certainty, streamlined customs procedures, and reduced regulatory barriers, all of which facilitate smoother trade flows and encourage long-term investment in supply chain infrastructure.

[Indonesia-Australia Partnership on Food Security in the Red Meat and Cattle Sector](#)

In the context of a growing demand for beef products both globally and in Indonesia, the Red Meat Partnership identified commercial beef cattle breeding as one of three priority areas to promote improved productivity and support Indonesia's food security when it came to beef (Chilver, et al., 2015). For Indonesia to develop large-scale commercially viable breeding enterprises, improved management skills and proven financial models for government and industry to follow are needed (Red Meat Partnership, 2023). The Partnership was funded by the Australian Government and ran from 2013 until 2023.

[Australia-Indonesia Partnership for Promoting Rural Incomes through Support for Markets in Agriculture \(PRISMA-2\)](#)

This was a five-year program (2019-23) funded by the Australian and Indonesian governments, focused on market systems development within the agricultural sector (White, et al., 2023). Building on the successes of its predecessor, AIP-Rural (2013-18), PRISMA-2 aimed to achieve a 30% income increase for 700,000 smallholder farming households by December 2023 through inclusive economic growth. Operating across six Indonesian provinces and 12 agricultural sectors, PRISMA-2 collaborated with private sector partners to enhance smallholder farmer competitiveness and market access, facilitating improvements in inputs, knowledge, and technology. An Independent Strategic Review (ISR) conducted as PRISMA-2 entered its final year confirmed the program's effectiveness and trajectory towards achieving its income targets. The ISR emphasises systemic change, policy influence, and long-term sustainability as key priorities, while also recognising PRISMA-2's contributions to food security, women's economic empowerment, climate change initiatives, and economic resilience – areas of strategic importance to both governments.

Vietnam

Trade with Vietnam saw a notable increase following its accession to the World Trade Organization in 2007 (Hansen, 2018). This momentum was further supported by regional trade frameworks such as the AANZFTA, which grants Australian cattle a zero-tariff rate when exported to member countries including Vietnam and Indonesia (Bui, 2021). This preferential access has significantly boosted the competitiveness of Australian livestock in Southeast Asian markets by lowering import costs and strengthening long-term trade relationships.

The zero-tariff provision is part of AANZFTA's broader commitment to progressive tariff elimination, which began in 2010 and reached full implementation for most tariff lines by 2020. For the livestock sector, this has translated into greater market certainty, streamlined customs procedures, and reduced regulatory barriers, all of which facilitate smoother trade flows and encourage investment in supply chain infrastructure.

Further deepening bilateral ties, Australia and Vietnam upgraded their relationship to a Comprehensive Strategic Partnership in March 2024, expanding cooperation across political, security, economic, development, and people-to-people domains (DAFF, 2025c). This enhanced partnership reinforces the role of trade—particularly in agriculture and livestock—as a pillar of regional development and mutual prosperity.

Kuwait

The Australia-Gulf Cooperation Council is an emerging free-trade agreement with Gulf nations, including Kuwait. Negotiations have been continuing since 2007 but have not been finalised.

China

The China-Australia Free Trade agreement along with a live cattle export protocol has allowed the export of dairy cattle to China, which began in 2001 (Edwards, et al., 2016). Australia has long been a proponent of trade liberalisation (Chatellier, 2021). Australia remains a large exporter of all animal products to China. The dynamics of the trade fluctuate over time, shaped by a range of subtle factors depending on domestic supply, bilateral agreements, changes in health regulations, exchange rates and political tensions (Chatellier, 2021).

4. Conclusion

The aim of this project was to communicate the contribution of Australian livestock exports to sustainable development in recipient nations. While alignment with well-established goals, frameworks and standards was envisaged, it became clear that many of these were not designed for industries or supply chains involving large numbers of stakeholders where statistical information is not routinely collected or published. Even so, the process of developing indicators highlighted both the comprehensive nature of international frameworks and the advanced position of the Australian beef, sheep and dairy industries in establishing sustainability frameworks. In almost all instances, these align closely with international standards, including the UN SDGs.

The project found that robust data was lacking for several indicators, meaning some results should be considered indicative only, which underlined the need for future collection efforts. Nonetheless, the overarching themes developed in this study provided a solid representation of the contributions of livestock exports to development in destination countries. The selected markets offered a useful spread of characteristics including species such as cattle and sheep, different end uses such as slaughter, feeder and dairy production, and varying stages of national development, reflecting the diversity of the industry.

Livestock export generates economic activity both in Australia and in destination countries. At destination, this includes logistics, transport, feeding, housing, slaughtering, animal health care, and downstream supply chain activity from wholesale through to retail. These activities align with SDG 8: “Decent work and economic growth.” While this clearly creates employment opportunities, the data is not routinely collected and estimates in this study should be treated as broad approximations. For example, wholesale income could be estimated but attempts to apportion this against costs would likely be unreliable. The size of each contribution also varied by market, with Indonesia standing out as a significant example, while contributions in Vietnam, Kuwait and China were proportionally smaller.

Capacity building, strongly linked to SDG 4: “Quality education,” has long been an area of Australian investment, particularly in Indonesia, where decades of work have supported animal health, welfare and husbandry improvements. Good data has been available here, and to a lesser extent in Vietnam. In contrast, less information was available for Kuwait and China, though anecdotal evidence suggests significant investment has also taken place.

Food security is reflected in SDG 2: “Zero hunger.” While no nation depends solely on Australian livestock, long-term trading relationships mean they are an important component of food systems in recipient countries. In rapidly developing economies such as Indonesia and Vietnam, exports help meet growing demand for protein. In China, dairy cattle from Australia contribute to building local dairy industries and improved nutrition. In the Middle East, including Kuwait, Australian sheep are a culturally appropriate and reliable food source in an environment where livestock production is constrained by land and climate.

Although animal welfare is not explicitly included in the UN SDGs, it is increasingly prominent in both Australian and international sustainability frameworks. Since the introduction of ESCAS, animal welfare outcomes have improved markedly in destination countries, supported by investment in infrastructure, equipment and training. Measuring these improvements remains difficult, but evidence points to ongoing gains. Australia has also contributed significantly to animal health in partner nations, with recent investment in Indonesia to support vaccination programs for LSD and FMD.

Under SDG 12: “Responsible consumption and production,” positive practices were also observed. Indonesian feedlots make use of by-products that would otherwise go to waste, while feedlot waste such as manure is used as fertiliser. In addition, destination markets often utilise more parts of the animal than Australia, where some lower-value products may be discarded.

Finally, partnerships represent one of the most enduring benefits of the livestock export trade, aligning with SDG 17: “Partnerships for the goals.” Formal trade and industry agreements underpin the trade, but informal relationships built over decades are equally important. Long-standing ties with Indonesia and Kuwait, and newer but growing links with Vietnam and China, reflect the role of livestock exports in building trust, understanding, and opportunities for collaboration.

4.1 Benefits to industry

This project has established a robust framework for assessing the benefits of the livestock export industry to destination countries, clearly linking these benefits to the UN SDGs and other major sustainability frameworks. The data collected demonstrates the positive impact of the livestock export trade on recipient nations and provides a valuable resource for communicating these benefits to stakeholders.

Additional benefits and insights to consider including:

- **Strategic communication:** The framework and data support more effective communication with government, industry, banks and community stakeholders, helping to build trust and understanding of the industry's role in international development.
- **Guidance for future investment:** By identifying which data is readily available and which is difficult to obtain, the project helps guide future research, investment, and data collection priorities for both industry and government.
- **Benchmarking and continuous improvement:** The framework enables ongoing benchmarking of industry performance against international standards, supporting continuous improvement in areas such as animal welfare, sustainability, and capacity building.
- **Encouraging international collaboration:** The findings highlight the importance of partnerships and knowledge exchange between Australia and destination countries, fostering international collaboration and capacity building.

Additionally, the project has clarified which types of data are easily accessible and which are challenging to obtain, helping to focus future efforts on closing these gaps and improving the evidence base for industry contributions.

4.2 Future research and recommendations

It is recommended that the indicators developed during this project continue to serve as the framework for future data collection and reporting under the current themes of contribution. However, several important gaps and opportunities for improvement have been identified:

- **Addressing data gaps:** The project has highlighted several areas where data is either not collected or is difficult to obtain, such as employment figures, infrastructure investment, and the use of recycled materials. Future efforts should prioritise closing these gaps, potentially through new partnerships, surveys, or pilot data collection initiatives.
- **Enhanced data collection:** There is a need to establish more systematic and consistent data collection processes, particularly in destination countries. This includes working with in-market partners, government agencies, and industry stakeholders to improve access to quantitative and qualitative data on economic, social, and environmental impacts.
- **Continuous review, alignment, and improvement of indicators:** The framework and its indicators should undergo regular review and refinement to ensure they remain practical, measurable, and relevant as new data emerges, and industry practices evolve. This process should maintain ongoing alignment with the UN SDGs and other international sustainability frameworks, so that the industry's contributions are communicated effectively to both domestic and international stakeholders.
- **Case studies and qualitative evidence:** Where quantitative data is lacking, targeted case studies can be developed to illustrate the benefits and challenges of the livestock export industry.
- **Stakeholder engagement:** Continued engagement with industry, government, banks and international partners is essential for validating indicators, sharing best practices, and ensuring that data collection efforts are collaborative and effective.
- **Transparency and communication:** Finally, it is recommended that the industry continues to communicate both its achievements and its challenges transparently, using the data and case studies collected to build trust and demonstrate ongoing commitment to sustainable development of key international markets.

By addressing these recommendations, the industry can strengthen its evidence base, support continuous improvement, and more effectively demonstrate its value to trading partners, policymakers, and the broader community.

5. References

ABARES, 2023. *Phase out of live sheep exports by sea: background information and analysis. Internal report to the independent panel for the phase out of live sheep exports by sea.*, Canberra: Australian Bureau of Agricultural and Resource Economics and Sciences.

ABARES, 2024. *Agricultural Commodities Report*, Canberra: Department of Agriculture, Fisheries and Forestry.

ABS, 2024. *Customised report*, Canberra: Australian Bureau of Statistics.

Academy of Global Food Economics and Policy, 2023. *China and Global Food Policy Report: Promoting Sustainable Healthy Diets for Transforming Agrifood Systems*, Beijing: Academy of Global Food Economics and Policy.

Agus, A. & Widi, T., 2018. Current situation and future prospects for beef cattle production in Indonesia - A review. *Asian-Australasian Journal of Animal Sciences*, 31(7), pp. 976-983.

Al Mawashi, 2019. *KLTT opens new capital slaughterhouse - Kuwait Times*. [Online]
Available at: <https://almawashi.com.kw/news-&-media/news-single-story/kltt-opens-new-capital-slaughterhouse>
[Accessed 23 January 2025].

Al Mawashi, 2023. *Al Mawashi - about us; services*. [Online]
Available at: <https://almawashi.com.kw/>
[Accessed January 2025].

Alaoui, A., Barao, L., Ferreira, C. S. S. & Hessel, R., 2022. An overview of sustainability assessment frameworks in agriculture. *Land*, 7 April, Issue 11, p. 537.

ALEC, 2024. *Timeline of Australia's livestock export industry*, Canberra: Australian Livestock Exporters Council.

Almutawa, A. & Abdulrahman, A., 2023. Impact of Climate Change on Agriculture, Fisheries and Livestock Sectors in Kuwait. *Journal of Geoscience and Environment Protection*, 11(10), pp. 141-166.

Anisa, E., Ondho, Y. & Samsudewa, D., 2017. The influence of different body condition score (BCS) on the on the intensity of estrous on simmental peranakan ongole cattle (simpo). *Jurnal Sain Peternakan Indonesia*, 12(2), pp. 133-141.

Australia Awards Indonesia, 2017. *Call for Applications: the Animal Husbandry and Cattle Production Short Course*. [Online]
Available at: <https://www.australiaawardsindonesia.org/news/detail/45/call-for-applications-the-animal-husbandry-and-cattle-production-short-course>
[Accessed 27 December 2024].

Ausvet, 2022. *Indonesia Biosecurity Support Project Final Project Results*, Jakarta: Ausvet.

Ausvet, 2024. *Indonesia Biosecurity Support Project*, North Sydney: Meat & Livestock Australia.

AWO Indonesia, 2025. AWO. [Online]

Available at: <https://forumawoindonesia.com/en/home/>

[Accessed 1 March 2025].

Basyar, B., 2021. Beef Cattle Farm Development Policies to Overcome Beef Distribution Problem in Indonesia: A Literature Review. *American Journal of Animal and Veterinary Sciences*, pp. 71-76.

Baych, A., 2023. *Dairy and Products Semi Annual: Peoples Republic of China*, Beijing: United States Department of Agriculture Foreign Agricultural Service.

BDO Econsearch, 2022. *Live Dairy Cattle Export Industry Economic Assessment - A report for the Livestock Export Program and Dairy Australia*, Adelaide: BDO EconSearch.

Beef Central, 2024. *Beef Central Live Export*. [Online]

Available at: <https://www.beefcentral.com/live-export/indonesia-moves-closer-to-opening-cattle-import-market-to-brazil-possibly-nz/>

[Accessed 1 May 2025].

Beere, G., 2004. *Developing an improved pre-slaughter restraining box for cattle*, North Sydney: Meat and Livestock Australia.

Beere, G., 2008. *Upgrade of an existing mark II cattle restraining box for ritual slaughter*, North Sydney: Meat & Livestock Australia.

Beere, G., 2009. *Design of Mark 3 cattle restraining box meeting Middle East standards*, North Sydney: Meat & Livestock Australia.

BPS Statistics Indonesia, 2025. *Mid year population (thousand people) 2025*. [Online]

Available at: <https://www.bps.go.id/en/statistics-table/2/MTk3NSMy/mid-year-population--thousand-people-.html>

[Accessed 1 September 2025].

Bui, N., 2021. *Vietnam Livestock Market Update*, Hanoi: USDA Foreign Agricultural Service.

Cabinet Secretariat of the Republic of Indonesia, 2025. *President Prabowo: Free Nutritious Meal Program is Investment for Nation's Future*. [Online]

Available at: <https://setkab.go.id/en/president-prabowo-free-nutritious-meal-program-is-investment-for-nations-future/>

[Accessed 1 September 2025].

Chatellier, V., 2021. Review: International trade in animal products and the place of the European Union: main trends over the last 20 years. *Animal*, 5(1), p. 100289.

Chilcott, C. et al., 2020. *Northern Australia beef situation analysis. A report to the Cooperative Research Centre for Developing Northern Australia*, Townsville: Cooperative Research Centre for Northern Australia.

Chilver, A., Barber, D., Brimblecombe, L. & Cory, P., 2015. *Indonesia - cattle breeding program investment design*, Canberra: Department of Foreign Affairs and Trade.

Collins, J., 2024. *Funding to strengthen biosecurity capability of the Indonesian cattle industry*. [Online]

Available at: <https://minister.agriculture.gov.au/collins/media-releases/indonesia-biosecurity-support->

program

[Accessed 1 March 2025].

Cowley, F. et al., 2020. Greater farmer investment in well-formulated diets can increase liveweight gain and smallholder gross margins from cattle fattening. *Livestock Science*, 242(December 2020), p. 104297.

DAFF, 2023. *Guideline for exporter supply chain assurance operations approved arrangements*, Canberra: Department of Agriculture, Fisheries and Forestry.

DAFF, 2024a. *All livestock exports*. [Online]

Available at: <https://www.mla.com.au/globalassets/mla-corporate/prices--markets/documents/os-markets/mla-mi-global-industry-trade-report-sheep.pdf>

[Accessed 21 November 2024].

DAFF, 2024b. *Exporter Supply Chain Assurance System (ESCAS)*. [Online]

Available at: <https://www.agriculture.gov.au/biosecurity-trade/export/controlled-goods/live-animals/livestock/exporters/escas>

[Accessed November 2024].

DAFF, 2025a. *ESCAS investigations*. [Online]

Available at: https://www.agriculture.gov.au/biosecurity-trade/export/controlled-goods/live-animals/livestock/compliance-investigations/investigations-escas#_2021

[Accessed 27 August 2025].

DAFF, 2025b. *Exporter Supply Chain Assurance System Regulatory Performance Report 1 April 2025 to 30 June 2025*, Canberra: Department of Agriculture, Fisheries and Forestry.

DAFF, 2025c. *Australia - Vietnam Development Partnership Plan 2025 - 2030*, Canberra: Department of Foreign Affairs and Trade.

Dalgleish, M., Whitelaw, A. & Lean, G., 2023. *Phasing out live sheep exports from Australia.*, Canberra: Episode 3 Pty Ltd.

Department of Agriculture, Water and the Environment, 2019. *Exporter Supply Chain Assurance System Regulatory Performance Report 1 December 2019 to 31 March 2020*, Canberra: Department of Agriculture, Water and the Environment.

Department of Agriculture, 2015. *Exporter Supply Chain Assurance System - Report January 2015*, Canberra: Department of Agriculture.

Ding, H., Fu, Y., Zheng, L. & Yan, Z., 2019. Determinants of the competitive advantage of dairy supply chains: Evidence from the Chinese dairy industry. *International Journal of Production Economics*, Volume 209, pp. 360-373.

Douphrate, D. et al., 2013. The dairy industry: a brief description of production practices, trends and farm characteristics around the world. *Journal of Agromedicine*, 18(3), pp. 187-197.

Edwards, B., Waldron, S., Brown, C. & Longworth, J., 2016. *The Sino-Australian Cattle and Beef Relationship*, Sydney: The Australia-China Relations Institute.

English, B., 2011. *Saleable meat yield - examples from north Queensland*. [Online]
Available at: <https://futurebeef.com.au/resources/saleable-meat-yield/>
[Accessed 4 May 2025].

Fadma, H., 2024. *Infrastructure upgrade to stunning*, North Sydney: Meat & Livestock Australia.

Fan, S., Zhu, Y. & Fang, X., 2023. Big Food Vision and Food Security in China. *Agricultural & Rural Studies*, June, Volume 1, p. 1.

FAO, 2014. *Sustainability Assessment of Food and Agriculture Systems Guidelines Version 3.0*. Rome: Food and Agriculture Organisation of the United Nations.

FAO, 2025. *FAOSTAT*. [Online]
Available at: <https://www.fao.org/faostat/en/#data/TCL>
[Accessed 21 November 2024].

Fell, J., 2019. *The future of Chinese agricultural policy*, Canberra: Department of Agriculture and Water Resources .

Focus Group Go Asia Pacific, 2025. [Interview] (31 March 2025).

Han, Q., 2022. *Sustainable Development of Livestock Production in Vietnam: Driving Forces, Challenges and Strategies*, Hanoi: GRAESE (Groupe de Recherches Asie de l'Est et du Sud Est).

Hansen, A., 2018. Meat consumption and capitalist development: the meatification of food provision and practice in Vietnam. *Geoforum*, Volume 93, pp. 57-68.

Hansen, J., 2024. *Impact of bread waste inclusion in feedlot diets on the environmental footprint of growing and finishing beef cattle*, Winnipeg: University of Manitoba.

Hodges, A., 2024. *Middle East and Northern Africa Livestock Export Program In Country Manager* [Interview] (18 December 2024).

Hopkins, D. & Fogarty, N., 1998. Diverse lamb genotypes - 1. yield of saleable cuts and meat in the carcass and the prediction of yield. *Meat Science*, 49(4), pp. 459-475.

Huld, A., 2024. *China's Dairy Industry - Market Trends and Opportunities*. [Online]
Available at: <https://www.china-briefing.com/news/dairy-industry-in-china-market-trends-opportunities>
[Accessed 4 May 2025].

IGLAE, 2021. *Review of the Exporter Supply Chain Assurance System*, Canberra: Inspector-General of Live Animal Exports c/- Department of Agriculture, Water and the Environment.

Index Mundi, 2025. *Index Mundi*. [Online]
Available at: <https://www.indexmundi.com/commodities/?commodity=lamb&months=120¤cy=kwd>
[Accessed 15 December 2024].

IRSA, 2009. *Beef Industry Policy Regulation in Indonesia*, Jakarta, Indonesia: Indonesia Research Strategic Analysis.

Johnson, S., 2024. *Live sheep export ban triggers food security fears for Kuwaiti importer*. [Online]
Available at: <https://www.abc.net.au/news/2024-10-26/how-the-live-sheep-export-ban-will-impact-the->

[middle-east/104514282](#)

[Accessed 4 December 2024].

Katadata, 2025. *The Government has not issued import permits for beef and buffalo for Eid stocks*. [Online] Available at: <https://katadata.co.id/amp/berita/industri/679c924e4cc00/pemerintah-belum-terbitkan-izin-impor-daging-sapi-dan-kerbau-untuk-stok-lebaran>

[Accessed 19 June 2025].

Khoiriyah, N. et al., 2024. Examining Indonesian protein consumption patterns and factors: A probit model. *Bio Web of Conferences*, Volume 143, p. 01003.

Khoiriyah, N., Forgenie, D., Iriany, A. & Apriliawan, H., 2023. Assessing the Welfare Effects of Rising Prices of Animal-Derived Sources of Food on Urban Households in Indonesia. *Journal of Economics and Business*, pp. 165-178.

Kusmartono, et al., 2022. Improving live weight gain of crossbred Limousin bulls with cassava peel silage. *Animal*, 16(5), p. 100524.

Kusumaningrum, et al., 2024. Supply and demand of beef in Indonesia: a system dynamics. *IOP Conference Series: Earth and Environmental Science*, Volume 1341, p. 102085.

Liu, Y. et al., 2023. Promotion and sustainable development of beef cattle farming industry in agro-pasture ecotone areas, Inner Mongolia of China: A comparison between two fattening systems. *Heliyon*, pp. 1-14.

LiveCorp and MLA (Livestock Export Program), 2008. *Livestock Handling Guide to Improve Communication, Production and Animal Welfare in the Middle East and Africa*, North Sydney: Meat & Livestock Australia.

LiveCorp, 2023. *State of the Industry 2023*, North Sydney: LiveCorp.

LiveCorp, 2024. *Livestock Export Industry FMD and LSD Vaccine Support and Implementation Program - Grant Final Report*, North Sydney: Australian Livestock Export Corporation Ltd.

LiveCorp, 2024. *State of the Industry 2024*, North Sydney: LiveCorp.

LiveCorp, 2025. *ESCAS Review and Report*. [Online]

Available at: <https://livecorp.com.au/project/CjIhQVsmor4yo6VRCONAD>

[Accessed 7 August 2025].

LiveCorp, 2025. *New animal welfare standards in Vietnam welcomed by live export industry*. [Online]

Available at: <https://livecorp.com.au/article/6gdrDrseIa4CEiNjwBU4K3>

[Accessed 21 June 2025].

Marianetti, J., 2024. *Dairy and products annual - People's Republic of China*, Beijing: US Department of Agriculture - Foreign Agricultural Service.

McKiernan, B., Gaden, B. & Sundstrom, B., 2007. *Dressing percentages for cattle*, Orange: NSW DPI.

Meat & Livestock Australia; LiveCorp, 2010. *Cattle Feedlot Treatment Guide*, North Sydney: Meat & Livestock Australia.

Miah, et al., 2022. Availability and utilisation pattern of agricultural waste at household level in selected areas of Bangladesh. *Waste Management & Research*, pp. 1277-1284.

MLA and LiveCorp, 2008. *Livestock Handling Guide to Improve Communication, Production and Animal Welfare in the Middle East and Africa*, North Sydney: Meat & Livestock Australia.

MLA and LiveCorp, 2019. *Research Development and Extension - 2019 Sheep Update*, North Sydney: LiveCorp and Meat & Livestock Australia.

MLA, 2008. Top 25 red meat processors calendar year 2007. *Meat & Livestock Industry Journal*, Issue September, p. supplement.

MLA, 2011. *Indonesia / Australia Live Cattle Export: Feedlots*. [Online]
Available at: <https://www.thebeefsite.com/articles/2700/indonesia-australia-live-cattle-export-feedlots/>
[Accessed 1 March 2025].

MLA, 2022. *Industry Insights Market Snapshot*, North Sydney: Meat & Livestock Australia.

MLA, 2023. *FMD vaccination Q&A with MLA's Indonesian Livestock Services Manager, Helen Fadma*. [Online]
Available at: <https://www.mla.com.au/news-and-events/industry-news/fmd-vaccination-qa-with-mlas-indonesian-livestock-services-manager-helen-fadma/>
[Accessed 1 March 2025].

MLA, 2024a. *MENA Market Snapshot - Beef & sheepmeat*, North Sydney: Meat & Livestock Australia.

MLA, 2024b. *Market Snapshot, Beef and Sheepmeat, Greater China*, North Sydney: Meat & Livestock Australia.

MLA, 2025a. *Indonesia: Market Snapshot: Beef and Sheepmeat*, North Sydney: Meat & Livestock Australia.

MLA, 2025b. *Vietnam Market Snapshot - Beef and Sheepmeat*, North Sydney: Meat & Livestock Australia.

MLA, 2025c. *MENA (Middle East & North Africa) market snapshot beef and sheepmeat*, North Sydney: Meat & Livestock Australia.

MLA, 2025d. *Livestock Export Collaborative Funding Program*. [Online]
Available at: <https://lepcofunding.mla.com.au/>
[Accessed 1 September 2025].

Nason, J., 2025a. *Will the momentum of cattle exports to Indonesia continue in 2025?*. [Online]
Available at: <https://www.beefcentral.com/live-export/will-the-momentum-of-cattle-exports-to-indonesia-continue-in-2025/>
[Accessed 1 March 2025].

Nason, J., 2025b. *The other livestock capacity issue no-one is talking about*. [Online]
Available at: <https://www.beefcentral.com/live-export/the-other-livestock-capacity-issue-no-one-is-talking-about/>
[Accessed 19 June 2025].

Nason, J., 2025c. *Indonesia increases 2025 cattle import quota*. [Online]
Available at: <https://www.beefcentral.com/live-export/indonesia-increases-2025-cattle-import-quota/>
[Accessed 22 May 2025].

Nason, J., 2025d. *Indonesia allows live cattle imports from Brazil and NZ: Govt official*. [Online]
Available at: <https://www.beefcentral.com/live-export/indonesia-allows-live-cattle-imports-from-brazil-and-nz-govt-official/>
[Accessed 19 June 2025].

Nguyen, M., 2024. *Statista*. [Online]
Available at: <https://www.statista.com/statistics/757614/vietnam-beef-consumption-per-capita>
[Accessed 10 January 2025].

Nutrnews, 2024. *Nutrnews*. [Online]
Available at: <https://nutrnews.com/en/chinas-dairy-industry-struggles-amid-milk-oversupply/>
[Accessed 4 May 2025].

Paramecwari, L., 2015. *Comparative and competitive advantages of feedlot industry, Indonesia*, Bogor: Bogor Agricultural University.

Patching, M., 2023. *Beef Central Live Export*. [Online]
Available at: <https://www.beefcentral.com/live-export/se-asia-report-november-2023/>
[Accessed 1 May 2025].

Patching, M., 2024a. *SE Asia Report: Indonesian live cattle and IBM import permits front of mind for industry*. [Online]
Available at: <https://www.beefcentral.com/live-export/se-asia-report-december-2024/>
[Accessed 1 March 2025].

Patching, M., 2024b. *A deep dive into Australia's livestock exporting companies since 2005*. [Online]
Available at: <https://www.beefcentral.com/live-export/a-deep-dive-into-australias-livestock-exporting-companies/>
[Accessed 4 April 2025].

Patching, M. & Coole, P., 2024. *Strengthening the cattle partnership: prioritising animal welfare and abattoir development*, North Sydney: LiveCorp and Meat & Livestock Australia.

Paul Troja Felix Domus Pty Ltd; Meatend Pty Ltd; G7B Stainless Pty Ltd, 2020. *Improving standing stun restraint in Indonesia*, North Sydney: Meat & Livestock Australia.

Poppi, D. et al., 2021. *Moving into more profitable beef production systems*. Bogor, IAARD Press, pp. 64-83.

PSP IPB-APFINDO, 2003. *The impact of feeder cattle imports*, Bogor, Indonesia: The Central Research Institute of Development Studies, Bogor Agricultural Institute.

Red Meat Partnership, 2019. *From Classroom to Cattle Station*. [Online]
Available at: <https://redmeatcattlepartnership.org/news-detail/53/from-classroom-to-cattle-station>
[Accessed 1 March 2025].

Red Meat Partnership, 2020a. *Fast Facts*. [Online]
Available at: <https://www.redmeatcattlepartnership.org/publications>
[Accessed 5 May 2025].

Red Meat Partnership, 2020b. *Joint State of the Industry Report 2020*, Jakarta: IAPASG.

Red Meat Partnership, 2023. *The Joint State of the Industry Report 2023*, Jakarta: IAPASG.

Red Meat Partnership, 2024. *Review of Processing Work Program*, Jakarta: IAPASG.

Rismayanthi, C., 2006. Protein consumption for reaching achievement. *J. Medikora*, pp. 135-145.

Schandert, S., 2025. *Indonesia allows live cattle imports from Brazil, says government official*. [Online] Available at: <https://www.datamarnews.com/noticias/indonesia-allows-live-cattle-imports-from-brazil-says-government-official/> [Accessed 19 June 2025].

Shamsuddoha, M., Nasir, T. & Hossain, N., 2023. A sustainable supply chain framework for dairy farming operations: a system dynamics approach. *Sustainability*, Volume 15, p. 8417.

Sheep Central, 2018. *Big live shipment bound for new \$70m Kuwait abattoir*. [Online] Available at: <https://www.sheepcentral.com/big-live-sheep-shipment-bound-for-new-70m-kuwait-abattoir/> [Accessed 21 January 2025].

Shi, Z., Li, J. & Hu, X., 2023. From large to powerful: international comparison, challenges and strategic choices for China's livestock industry. *Agriculture*, Volume 13, p. 1298.

Sianipar, T., 2009. *Efek Pelepah Daun Kelapa Sawit dan Limbah Industrinya sebagai Pakan Terhadap Pertumbuhan Sapi Peranakan Ongole pada fase pertumbuhan (The Effect of Oil Palm Fronds and Their Industrial Waste as Feed on the Growth of Ongole Peranakan Cattle in the Growth)*, Medan, Indonesia: Universitas Sumatera Utara (University North Sumatra).

Socialist Republic of Vietnam, 2025. *Government News Viet nam is third populous country in Southeast Asia*. [Online] Available at: <https://en.baochinhphu.vn/population.html> [Accessed 1 September 2025].

Soedjana, et al., 2012. *Menakar Potensi Penyediaan Sapi Dan Kerbau Di Dalam Negeri Menuju Swasembada (Measuring the Potential of Domestic Cattle and Buffalo Provision Towards Self-Sufficiency)*. Jakarta, IAARD Press.

Sojitz Corporation, 2024. *Sojitz and Vinamilk Group begin operation of Vietnam's largest beef processing plant*. [Online] Available at: <https://www.sojitz.com/en/news/article/20241217.html> [Accessed 11 August 2025].

Stark Engineering, 2020. *Review of Mark 3 and development of Mark 4 cattle restraining box*, North Sydney: Meat & Livestock Australia.

Stark, G. & Hewitt, L., 2012. *Upgrade Mark IV cattle restraining box*, North Sydney: Meat & Livestock Australia.

Statista, 2024. *Cows milk production volume in China from 2014 to 2024*. [Online] Available at: <https://www.statista.com/statistics/275794/milk-production-in-china/> [Accessed 1 December 2025].

Sugama, I. & Budiari, N., 2012. Pemanfaatan Jerami Padi Sebagai Pakan Alternatif Untuk Sapi Bali Dara (The Utilization of Rice Straw as Alternative Feed for Balinese Virgin Cattle). *Majalah Ilmiah Peternakan (Animal Science Magazine)*, 15(1), pp. 21-25.

Susilo, A. & Suhardi, D. A., 2022. Livestock self-sufficiency and livestock household distribution in Indonesia: current state and expected developments. *AgriDev*, pp. 1-10.

Tenrisanna, V., Rahman, M. & Khanam, R., 2015. *Beef and offal market in Indonesia - evaluation of import trade policy*, Toowoomba, Queensland: School of Commerce, Faculty of Business, Education, Law and Arts, University of Southern Queensland.

Thompson, B., 2023. Kuwait says live sheep trade vital as farmers turn on Albanese. *Australian Financial Review*, 17 March.

United Nations Population Fund, 2025. *China Population 2025 - United Nations Population Fund*. [Online] Available at: <https://www.unfpa.org/pcm/data/world-population/CN> [Accessed 1 September 2025].

Van Dung, P. et al., 2020. *Livestock policies in Son La Province, Vietnam: A Review*, Hanoi: International Centre for Tropical Agriculture.

Vietdata, 2025. *Vietnam meat and meat product imports increased by 18.1%*. [Online] Available at: <https://www.vietdata.vn/post/vietnam-meat-and-meat-product-imports-increased-by-18-1> [Accessed 1 February 2025].

White, S., Fatimah, D. & Keogh, P., 2023. *Independent Strategic Review of Australia-Indonesia Partnership for Rural Incomes through Support for Markets in Agriculture Phase 2 and Management Response*, Canberra: Department of Foreign Affairs and Trade.

Willis, G., 2009. *Investigating alternative feedstuffs for Indonesian feedlots*, North Sydney: Meat & Livestock Australia.

World Bank, 2025. *Population total - Kuwait*. [Online] Available at: <https://data.worldbank.org/indicator/SP.POP.TOTL?locations=KW> [Accessed 19 June 2025].

World Organisation for Animal Health, 2022. *World Organisation for Animal Health Bulletin*. [Online] Available at: https://bulletin.woah.org/?official=11-1-2-2022-2_idn-fmd-suspension [Accessed 1 May 2025].