Enhancing the competitiveness of the Australian livestock export industry.

Australian
Farm Institute

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Executive Summary

Australia has been an exporter of livestock for well over one hundred years, and the trade has continued to expand in importance and deliver economic benefits to rural communities and the national economy. In the 2015 calendar year, Australian livestock exports were valued in excess of $1.75 billion, which ranks livestock exports with cotton, sugar or canola as one of the nation's most important rural exports. Significantly, livestock exports are a key economic activity which generates economic growth across northern Australia at a time when the development of this part of the nation is seen as an important element of future national economic development.

The research associated with this report has involved a broad-ranging review of the competitiveness of Australia's livestock export sector, and the identification of strategies that will assist to maintain and improve that competitiveness in response to growing competition in many international livestock markets.

Global trade in livestock is growing rapidly and is now valued in excess of $US 18 billion per annum, having more than doubled in value over the past decade. One reason has been the removal of restrictions on international agricultural trade which has facilitated the development of integrate multi-national supply chains, in which livestock and livestock products cross international boundaries on multiple occasions while being transformed into consumer products.

The live export of Australian cattle, sheep and goats constitutes a relatively small part of the total market for each of these livestock groups, varying from approximately five to ten percent of total annual Australian turnoff. However, at a regional level and for specific classes of livestock, the live export trade provides a very important market outlet, and in the absence of that market the financial viability of many regional livestock industries would be severely challenged.

There have been a number of economic studies carried out in order to better understand the role that livestock exports play in the Australian economy. Some of these have questioned the economic value of the trade, arguing that the potential loss of throughput for the Australian meat processing sector that arises from the diversion of livestock to live exports more than negates any economic value generated by the trade. A review of such research reveals significant limitations in the methodologies employed in some studies. More robust economic research has concluded that livestock exports deliver significant and growing economic value to the national economy, and even greater benefits when considered at the regional level.

A number of case-study farm businesses were analysed to examine the importance of live export markets to the financial viability of those businesses. While the impact of live exports varied by farm and was most significant for those located in northern Australia or in locations remote from processing works, in all the case studies analysed the availability of live export markets delivered a range of both tangible and intangible benefits that assisted the businesses in maintaining financial viability. Aside from direct financial benefits, each of the farm businesses perceived there to be advantages in the added marketing flexibility live exports provided. In particular, this

included the ability to market unfinished livestock in situations where adverse seasonal conditions precluded those stock being finished to slaughter weights, and the related ability to time the disposal of those stock to fit in with seasonal pasture growth or labour requirements.

An important element of the research reported here was to consider some key priorities to maintain or improve the future competitiveness of the Australian livestock export sector. The need to maintain and improve competitiveness has become more acute over recent years, as new competition has emerged in key export markets. This includes livestock exporting nations located in North Africa, Eastern Europe, Asia and South America. In almost all instances, these competitors operate off a lower cost base than is the case for Australian livestock businesses.

Strategic priorities identified to sustain and improve the competitiveness of Australian livestock export industries include;

- A requirement for participants in the trade to actively engage with governments and others in planning and developing improved transport infrastructure, in particular in Northern Australia.
- Recognition that markets for livestock and livestock products in the key regions that Australian livestock are exported to are rapidly changing, as urbanization and growing per capita wealth results in changing consumer tastes and market arrangements. There is a clear need for Australian livestock industries to develop a good understanding of the dynamic changes that are occurring in these markets, and to develop strategies to respond to these changes.
- The animal welfare and livestock management standards associated with Australian livestock exports have long been a matter of heightened community concern, with a number of trade interruptions associated with these issues in the past. Australia has implemented world-leading standards including exporters being responsible for livestock welfare through the entire supply chain to the point of slaughter. No other livestock exporting nation has adopted similar standards, and they impose a significant cost on Australian livestock exporters and producers. It is important to ensure that current standards are implemented as efficiently as possible, and that Australia is at the forefront in seeking the adoption of similar standards internationally. The livestock export sector should engage closely with the Australian Government in order to identify ways to achieve effective regulation at minimal cost.
- Australian livestock exporters and the Australian Government should actively participate in relevant international fora to encourage global adoption of livestock export standards that are equivalent to those that have been adopted in Australia, and ensure that equivalent international standards are appropriately recognised in the implementation of Australian regulations.
- Australian livestock exporters have a range of common interests with the meat processing sector, and in many instances the two sectors are complementary. Efforts are needed to identify issues of common interest and to engage in advocacy and other activities to advance these common interests.

- The relative disease-free status of Australian livestock is a key element in the competitiveness of Australian livestock in international markets. Australian livestock exporters are in a unique position to help maintain Australia's current superior biosecurity status, and to ensure Australia can recover quickly from any biosecurity incidents.
- The livestock export trade has suffered in the past from what effectively amounts to the removal of its 'social licence to operate' by the Australian community. There are a number of different actions that the industry needs to consider in order to strengthen it's social licence to operate, and to ensure that any future incidents are dealt with in an effective manner.
- Whilst easily overlooked, the support of the broad livestock industry in Australia is an important element of the potential future success of the sector. For many livestock producers in southern Australia, the impact that the livestock export sector has on their enterprise profitability is not readily apparent. There are steps the livestock export sector should take to improve recognition of its role in livestock markets.

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1. Introduction

Over the past decade and a half, dramatic changes have occurred in global agricultural trade as agreements under the World Trade Organisation and regional and bilateral trade agreements have substantially removed what were previously major barriers limiting agricultural trade. As a consequence, the annual value of global agricultural trade has increased from approximately $400 billion in 2000, to almost $1,500 billion in 2014, more than tripling in just fifteen years.

Not only has the volume and value of agricultural trade increased dramatically, but so has the nature of agricultural trade. Whereas in the past agricultural exports typically went from the producer nation to the consuming nation, it is now increasingly common for trade to occur within vertically-aligned supply chains, in which agricultural products from one nation are exported to undergo a second stage of production or initial processing in a second, then exported to undergo further transformation in a third nation before being exported as a consumer good to the nation of final consumption.

These developments are occurring across the entire spectrum of agriculture, from grains through to livestock and horticulture as, in the absence of trade barriers, national comparative advantages (be they cheap land, cheap labour or low-cost energy) become more important in determining which nation is more efficient at carrying out specific activities within a supply chain.

These same trends are evident, even in relation to Australian agricultural exports. Australian potatoes, for example, are exported to New Zealand for processing before being re-exported to other nations (including back to Australia) as frozen potato chips ready for cooking and consumption. Similarly, in the livestock industries, Australia is experiencing rapidly growing demand for exports of livestock, with these animals destined to be used for breeding and production (in the case of dairy cattle) or fattened and slaughtered in overseas locations, before being consumed or re-exported to other national markets.

Examples abound of these types of developments in both plant and livestock industries. In livestock industries, Denmark and Canada are major and growing exporters of live pigs to Eastern Europe and the USA, because the economics of grain production and relative labour costs dictate that it is more economic to grow out, fatten and slaughter pigs in nations that have large grain sectors and cheap labour. The resulting pigmeat is then exported in a wide range of forms to global markets, including Australia, where it is processed and sold to consumers. In the grain industries, it is becoming increasingly common for semi-processed products to be transferred across multiple international borders by multinational grain trading companies such as Cargill and ADM before final conversion into a consumable product.

At the same time, the growth in global agricultural trade has brought with it an expansion in the number of nations competing to export agricultural products to world markets. There has been spectacular growth in the volume and range of exports from South American nations such as Brazil, Argentina and Chile, as well as from Eastern European nations, and more recently from

Asian and North African nations. For example, the two largest beef exporting nations are now India and Brazil which have taken over from the USA and Australia, and the most competitive wheat exports are now sourced from Eastern Europe.

Australia has historically been a globally successful exporter of livestock and livestock products, especially sheepmeats, wool, beef, live sheep, live beef cattle and in more recent times live dairy cattle and goats. The live animal export trade in particular has been growing in importance for Australian livestock producers, as Asian and Middle Eastern consumers have transitioned from carbohydrate-based diets to protein-based diets and demand for meat and dairy products in these regions has expanded. For cultural and logistical reasons, the preference in many of these markets is for imports of livestock that are suitable for fattening and subsequent slaughter in the destination market, or which can be slaughtered close to the final market due to a lack of cold chain logistics. Equally important from an Australian perspective is that livestock exports provide alternative market outlets and a greater range of marketing options which assists Australian livestock producers to better manage risk.

However, over recent years. Australian livestock exports have faced a number of challenges and appear to be declining in relative competitiveness, as exports from South America and Eastern Europe capture a growing share of international livestock markets in which Australia was previously dominant. Adding to the challenges, it is apparent that an array of different groups within Australia are strongly committed to the cessation of Australian livestock exports, believing the trade to be cruel and inhuman.

Against this background, this research project has the objective of analyzing the current and future competitiveness of the Australian livestock export industries, seeking to fully understand the significance of these industries for Australia's livestock production sector, and to identify strategic initiatives which will enhance the competitiveness of the sector in the future.

In the context of this research, competitiveness is taken to mean the ability to grow the real value of Australian livestock exports over time. This implies not only that Australian livestock exports capture an increasing share of global markets, but also that the livestock export industry provides an attractive alternative or complementary market to the Australian meat processing sector, and is able to capture a viable share of the supply of livestock produced on Australian farms.

Project Objectives:

1. To analyse global trends in livestock exports, identifying in particular changes in markets that have been significant for Australia over recent years.

2. To analyse previous research seeking to better understand the significance of livestock export markets for Australian livestock producers.

3. To analyse trends in Australian livestock industries over recent years, including in livestock production, feedlotting and processing capacity, and trends in livestock prices.

4. Utilising information collected during the earlier research, to analyse a number of case-studies modelling the value of livestock exports to Australian livestock farm businesses.

5. Based on the outcomes of the above analyses, to identify critical priorities for the Australian livestock industries in order to enhance long-term industry competitiveness.

Methodology:

The research undertaken in this project consisted essentially of desk-top and industry research appropriate to achieve each of the major objectives that have been identified for the project.

Global livestock export and import statistics were available from a number of different sources. The UN Comtrade database provided relatively up-to-date statistics on agricultural trade, including trade in livestock, disaggregated on a country-by-country basis in order to enable analysis of bilateral trade flows. The Food and Agriculture Organisation of the UN also compiles global agricultural trade statistics, although these are less recent and do not enable bilateral trade flows to be easily analysed. The United States Department of Agriculture (USDA) compiles a range of different statistical databases, which include livestock trade as part of the available data. In addition, a number of international and national agencies also provide trade statistics and trade projections. These were utilized to develop a bank of information and to conduct analyses in order to develop a comprehensive picture of global trends in livestock trade.

Equally important in developing an understanding of global trends in livestock trade was a need to gain a full understanding of the regulations associated with trade of livestock at both a national and international level, and the current and potential impact of these on future global trends in livestock trade.

An important component of the research was the consideration of livestock industry supply and demand trends and conditions in Australia, and the role of the livestock export industries in adding to competition in domestic livestock markets. The live-cattle export suspension in 2011 and the subsequent market impacts of that event provide an opportunity to better understand factors impacting on the prices received by Australian livestock farmers, and the impact of livestock exports on Australian markets.

Over recent years there have been a number of analyses conducted seeking to identify the significance of livestock exports to Australian livestock sectors. These were examined as part of the analysis associated with the second research objective. These provided important background information, and in some cases involved projections that were revisited in the light of recent developments, including but not limited to the pause in live cattle exports in 2011, and the recent surge in cattle turnoff due to the extended Queensland drought.

Information gathered while researching the first two objectives was utilized, along with relevant market and other statistical information, to develop a more complete understanding of the major market drivers impacting on Australian livestock industries over recent years. A range of factors, including global livestock market trends, the Australian dollar exchange rate, Australian feedlot, processing and shipping capacity and Australian seasonal conditions have all impacted on Australian livestock markets over recent years, as have developments in relation to livestock exports. While stopping short of the development of comprehensive modelling tools, this enabled projections of some possible future scenarios to be considered, along with their implications for the livestock export industry and Australian livestock producers more generally.

The fourth objective of the research was addressed through analyses based on five case-study livestock enterprises. These involved;

- a beef cattle enterprise in northern Australia involved in supplying live export and other markets
- a mixed cropping and sheep enterprise in Western Australia involved in supplying both domestic and live export markets.
- a mixed livestock and cropping enterprise located in the eastern states supplying a range of domestic and export markets,
- a pastoral zone sheep and goat enterprise supplying a range of different markets, and
- a dairy enterprise with the capacity to supply dairy heifers to the live export trade.

Information obtained from the case-study farms enabled analyses to be carried out of the potential impact of a range of different scenarios on these farm businesses. The focus of this analysis was on the impacts of the different scenarios on business profitability, including the resilience of the business in response to drought and other risks. This research also included an analysis of the returns available from different livestock enterprises – including sheep, beef cattle, dairy cattle and goats – compared to other enterprises such as cropping, in order to better understand the extent to which these different farm enterprises are substitutable.

Research associated with the first four objectives of the project provided a sound basis of information that was utilized to analyse and consider the critical strategic factors that will be important to the future competitiveness of the Australian livestock export industry. This research involved an analysis of potential initiatives that may be appropriate for the livestock export industries to implement in order to enhance the future competitiveness of the sector.

A final component of the research was to development of a range of different forms of extension material suitable for use in communicating the results of the research to a range of different audiences, with a predominant focus on producer audiences. The aim was to ensure that the extension material provided a clear and concise summary of the findings of the research, and provided the audience with opportunities to further investigate various issues associated with the livestock export market in Australia.

Scope:

The research for the project outlined was conducted from within Australia, but was international in scope, and utilised data and information compiled by a range of international and national statistical and agricultural agencies. The focus in relation to Australian livestock industries was on sheep, beef and dairy cattle and goats, although it became apparent that available data on the goat production and export industry are somewhat limited.

Industry data utilized in the analyses included statistics compiled by the Australian Bureau of Statistics (ABS), the Australian Bureau of Agricultural and Resource Economics and Sciences (ABARES), Meat and Livestock Australia (MLA), and other relevant industry organisations.

The five case study livestock businesses selected for inclusion in the research were representative of livestock enterprises in the relevant regions. Information for the case studies included details of the regional location and physical nature of the property, the enterprise mix on the farm, seasonal conditions, livestock inventories, farm financial performance over time, and the available markets for livestock.

2. Global livestock markets

There has been dramatic growth in the annual value of global livestock exports since the early 2000s, as a consequence of the removal of many of the trade barriers that previously impeded agricultural trade. In the absence of artificial barriers to agricultural trade, nations tend to become more specialized in those areas of agricultural production or processing in which they hold national comparative advantages, and the resulting trend towards greater specialization has been facilitated by the dramatic advances in telecommunications and transport that have occurred over the same time period.

Consequently, the annual value of global livestock trade has grown from approximately $US 7 billion in 2000 to more than $US 19 billion in 2013 (the most recent year for which comprehensive data are available), an increase of almost 300% over a period of a decade and a half.

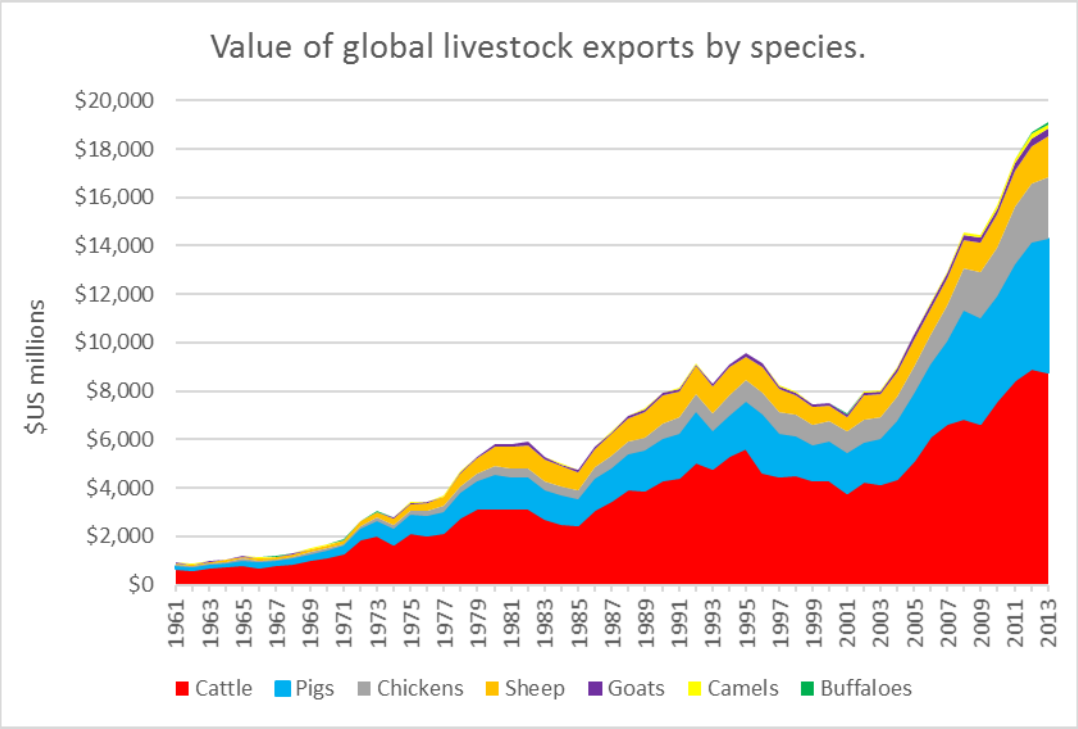


Figure 1. Annual value of global trade in livestock. (Source: FAO)

The greatest increases in export value have been trade in cattle and pigs, although there has also been growth observed in the case of chicken and sheep. In the case of pigs and chickens, much of the trade growth has occurred between closely located nations (for example between Canada and the USA, or between nations in Western and Eastern Europe) whereas in the case of cattle, sheep and goats the trade has occurred between nations separated by much greater distances.

The largest national exporters of livestock are France, the Netherlands, Canada and Germany, although developing nations such as Brazil, China, Mexico and Somalia are also significant and

growing exporters. It is noteworthy that the largest twelve national livestock exporters only account for a little over half the total global annual value of livestock exports, and more than 40 nations have annual livestock exports valued in excess of $US 50 million.

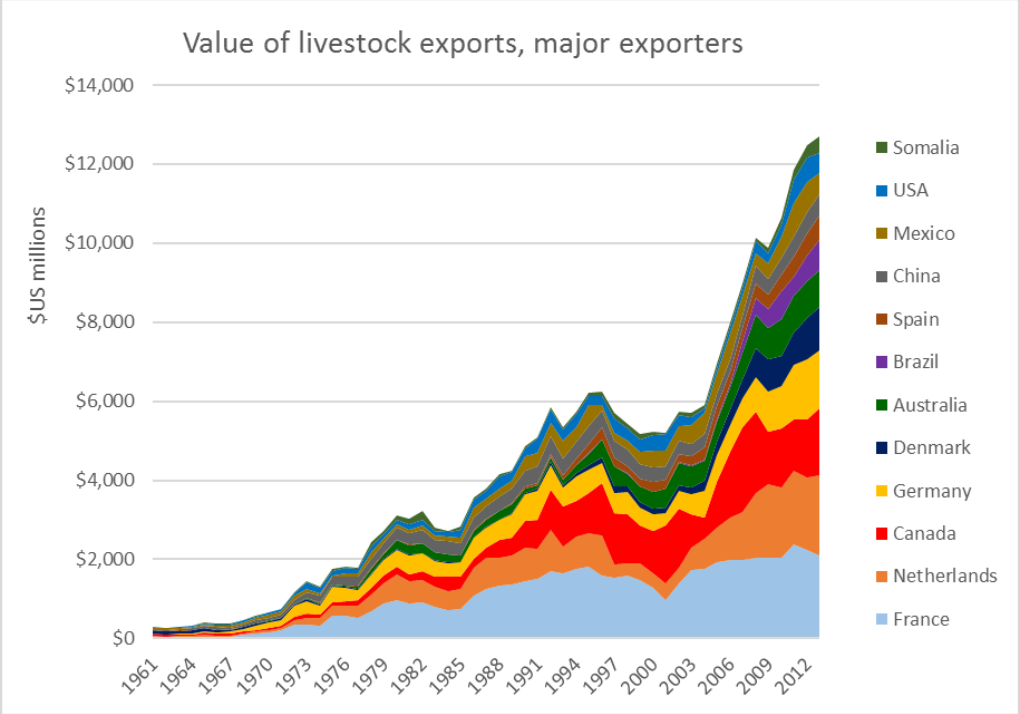


Figure 2. Value of livestock exports by major exporting nations. (Source: FAO)

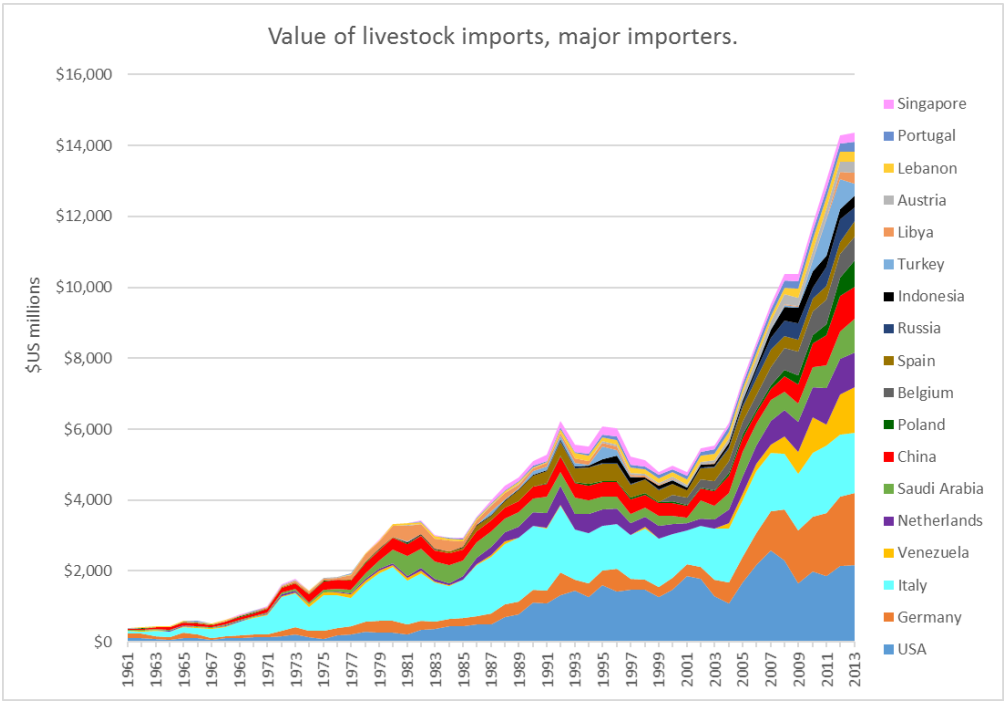


Figure 3. Value of livestock imports by major importers. (Source: FAO)

There is a similar range of different nations which are the leading importers of livestock by value. The three largest importers are the USA, Germany and Italy, but there are a large number of different nations that import livestock, with more than fifty nations importing in excess of $US 50 million worth of livestock annually. It is noteworthy that some of the largest importers are also amongst the largest exporters of livestock, highlighting the increasingly complex international supply chains that are now developing for agricultural products including livestock.

Trade in live cattle.

The global value of live cattle exports in 2013 was approximately $US 8.8 billion. Leading national live cattle exporters were France, Canada, Australia, Brazil and Mexico, although there were more than 25 nations which had annual live cattle exports valued in excess of $US fifty million in 2013. Nations which have experienced notable growth in live cattle exports over recent years include Canada, Brazil, Mexico and Colombia. Live cattle exports from Canada and Mexico have are predominantly to the USA for fattening in feedlots prior to slaughter in the USA.

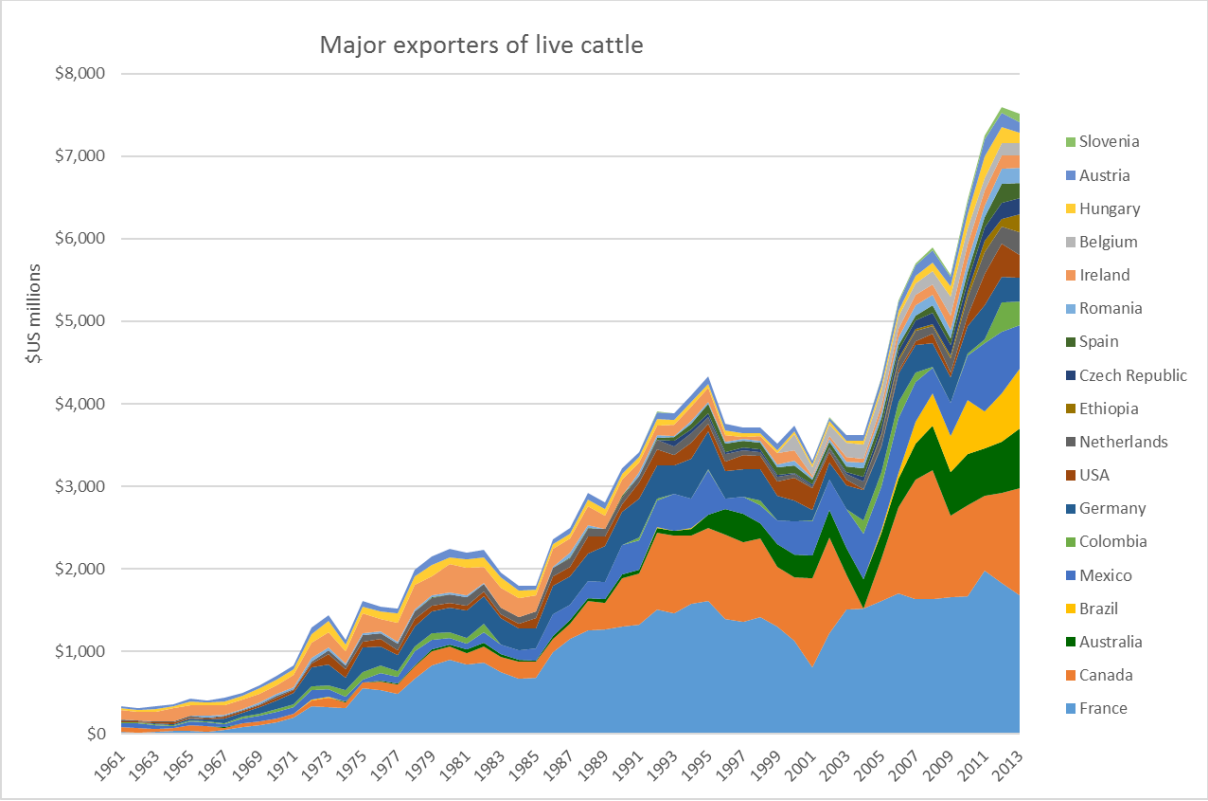


Figure 4. Value of live cattle exports by major exporting nations. (Source: FAO)

As is evident from the above graph, the annual value of global live cattle exports is volatile. There has been a market phase of growth in value post 2001, which was checked by the Global Financial Crisis in 2008, and then resumed post that event. Longer term trends for individual nations are best reflected in comparisons of multi-year averages. The changes that have occurred

in the value of live cattle exports by individual nations are evident in the following graph, which compares the average value of national live cattle exports over the five years to 2004 with the average over the five years to 2013. Noteworthy is the emergence of developing nation exporters such as Brazil, Mexico, Colombia and Ethiopia.

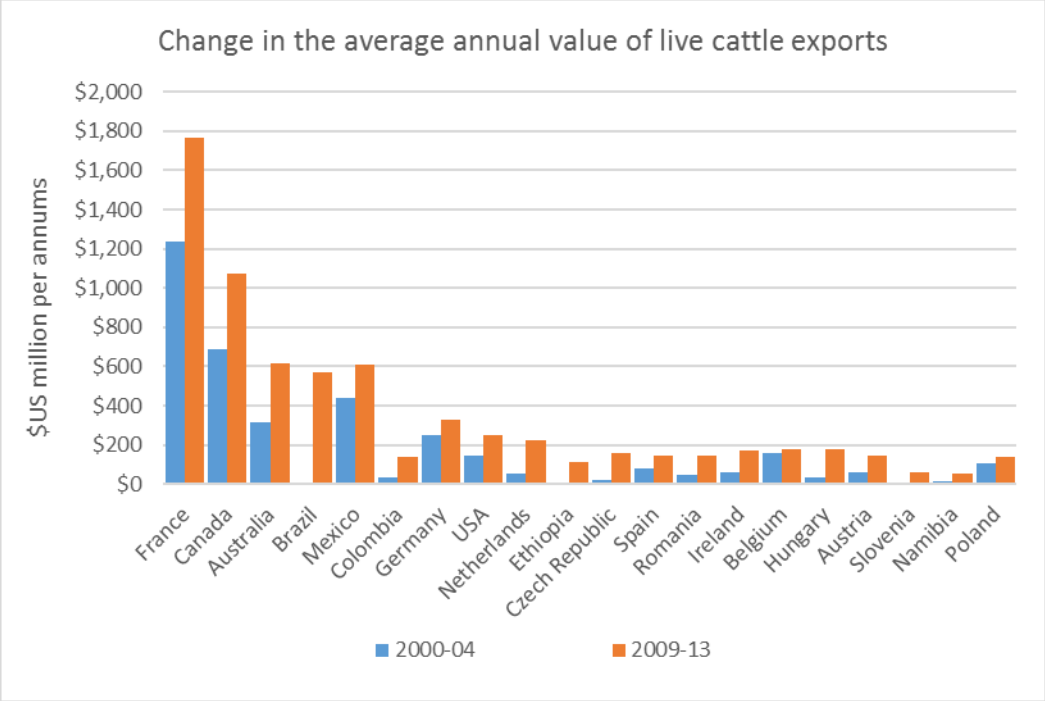


Figure 5. Change in the value of live cattle exports over the past decade.

Major importers of live cattle include the USA, Italy, Venezuela, Indonesia, China, Turkey and Russia. There are, however, a large number of nations which import live cattle, with some thirty-five nations with annual live cattle imports valued at $US 50 million or more.

Some of the trade in cattle involves dairy heifers destined for use in the dairy industries of importing nations, and there is also some trade in breeding livestock to improve national herds, as distinct from trade in animals destined for fattening and subsequent slaughter. Available international statistics do not differentiate these categories of exports or imports.

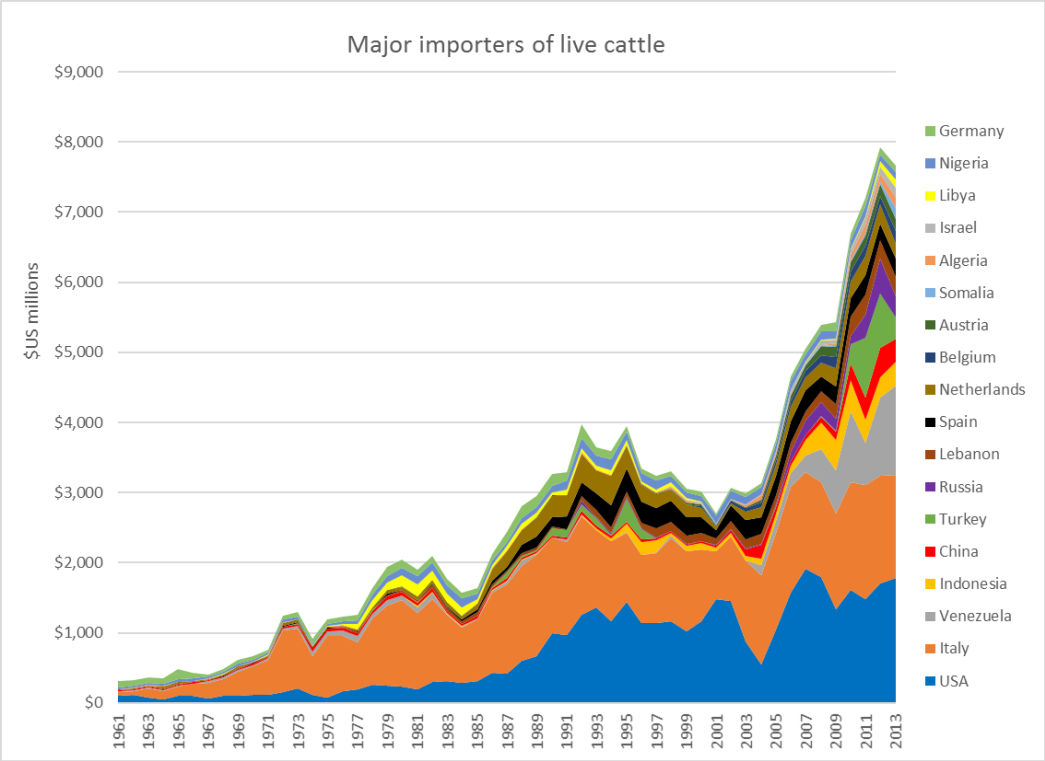


Figure 6. Value of live cattle imports by major importing nations. (Source: FAO)

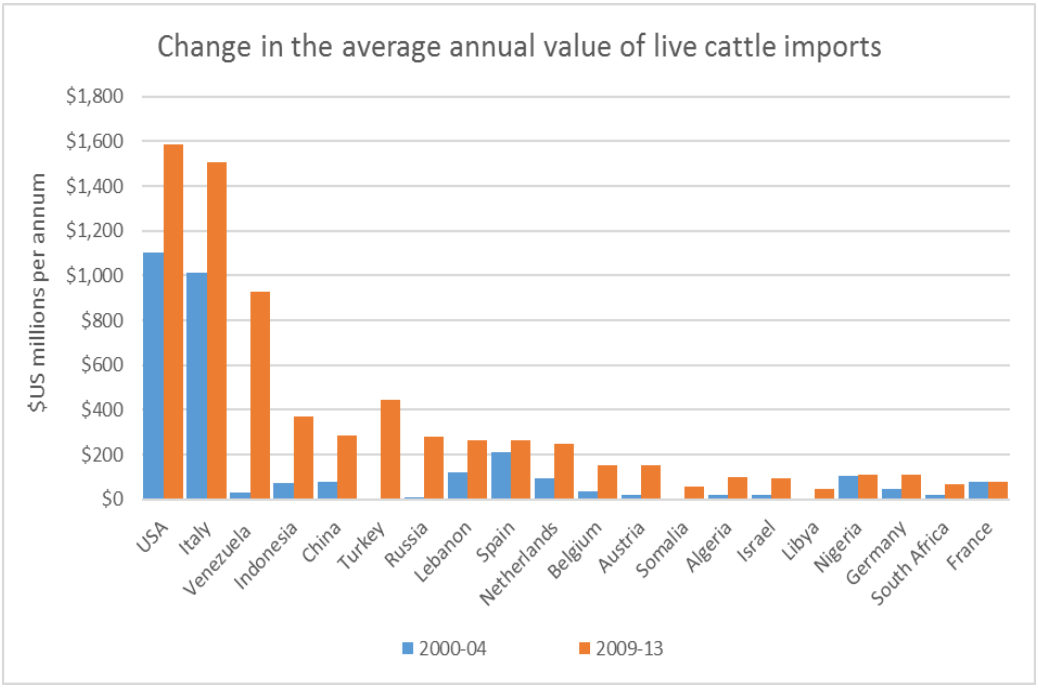


Figure 7. Change in the value of live cattle exports over the past decade. (Source: FAO)

Trade in live pigs.

Australia is not involved in trading live pigs, however it is of interest to note that there has been substantial growth in the annual value of trade in live pigs over the past decade, paralleling developments in other livestock industries. Much of the trade in live pigs appears to be between neighbouring nations, rather than over long distances.

The global value of live pig exports in 2013 was approximately $US 5.5 billion, with leading exporting nations including the Netherlands, Denmark, China, Germany and Canada. In the case of the major European live pig exporters, a large proportion of the exports are from nations with very limited and high value agricultural land, to nations in Eastern Europe which have lower cost structures and plentiful supplies of grain for finishing livestock. In the case of Canada, live pig exports are destined for feeding and finishing piggeries in the USA.

The growth in live pig exports from Canada to the USA slowed markedly around 2008 when the USA introduced new Country-of-Origin labelling laws that disadvantaged Canadian pig exporters. These have been successfully challenged in the World Trade Organisation, and there has been subsequent growth in the value of Canadian live pig exports in recent years.

Major national live pig importers include Germany, Poland, China and the USA. The growth in imports by Germany has been particularly notable in recent years, with many of these imports sourced from The Netherlands and Denmark.

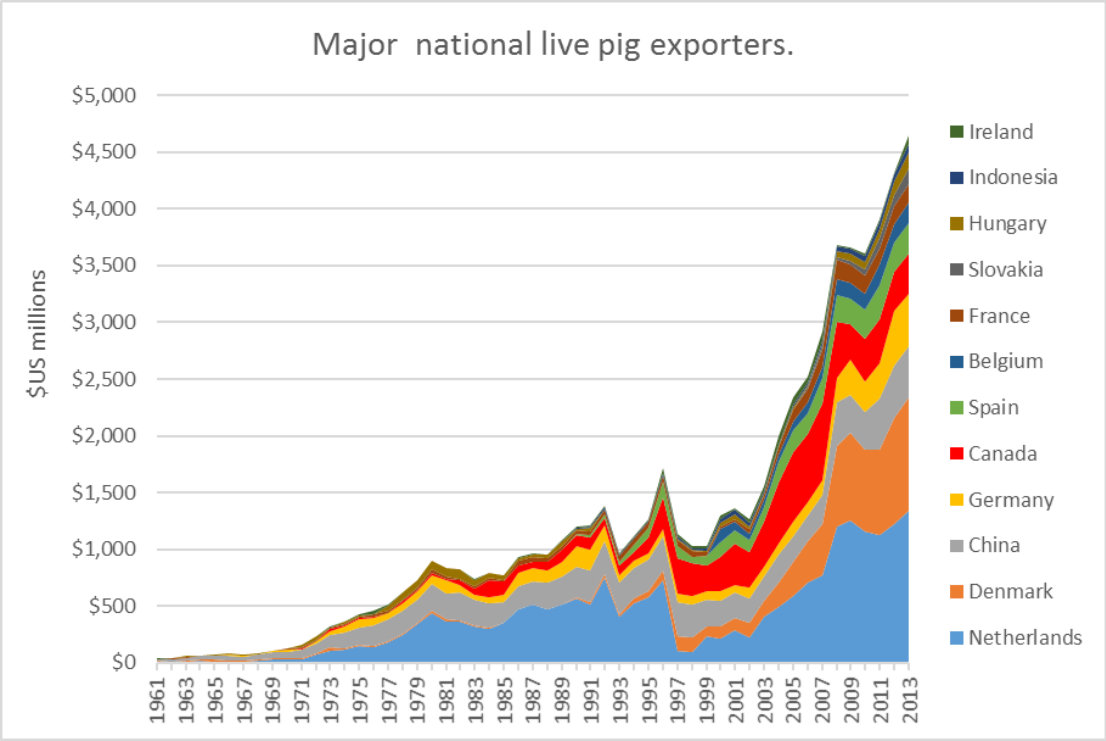


Figure 8 Value of live pig exports by major exporting nations. (Source: FAO)

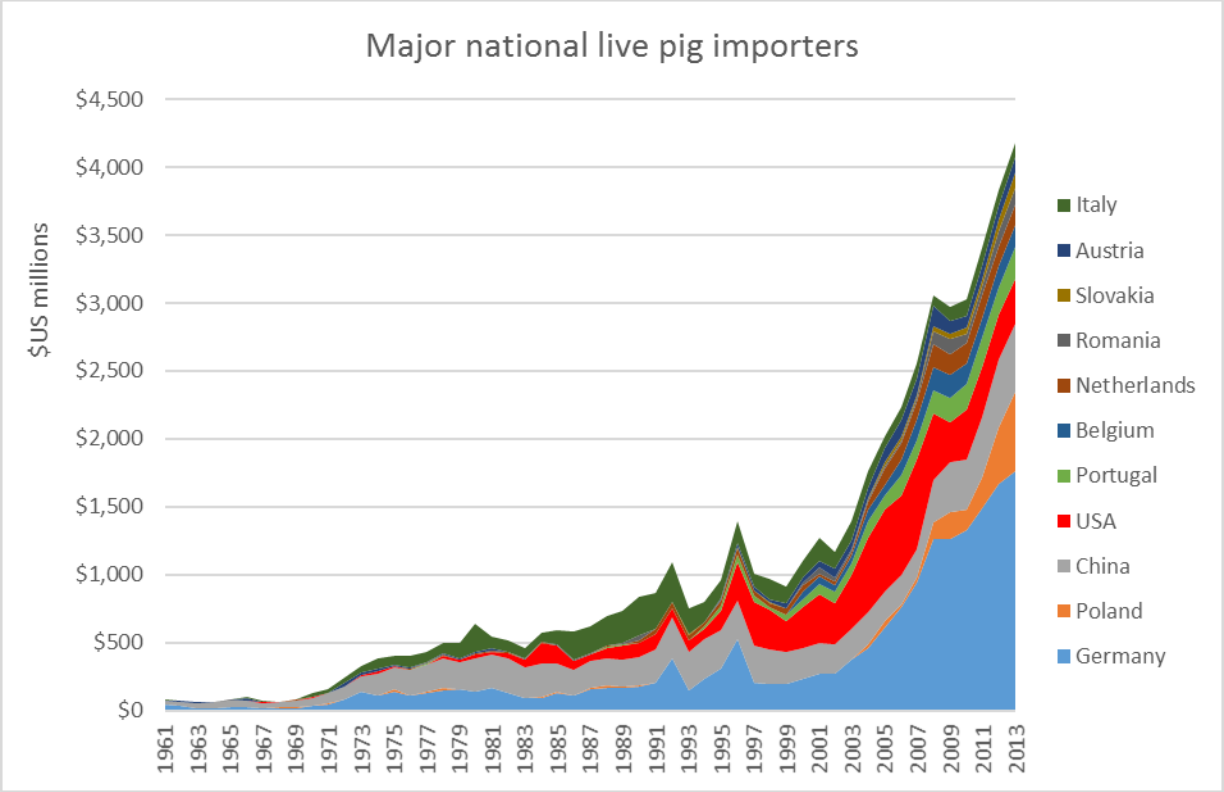


Figure 9 Value of live pig imports by major importing nations. (Source: FAO)

Trade in live sheep.

Global exports of live sheep were valued at approximately $US 1.7 billion in 2013. The global trade in live sheep has been quite volatile over recent decades, with political turmoil in importing nations and major changes in sheep exporting nations creating major disruptions to the trade.

Australia was previously the leading global exporter of live sheep, however the cessation of the wool Reserve Price Scheme in 1990 and the subsequent reduction in the national sheep flock from approximately 180 million to 75 million has dramatically reduced the supply of sheep suitable for live export from Australia.

With reduced supply from Australia, importing nations have switched to alternative suppliers including those located in North Africa, and in Eastern Europe. Particularly noticeable over recent years has been the emergence of Sudan, Jordan, Romania and Somalia as major exporters of live sheep.

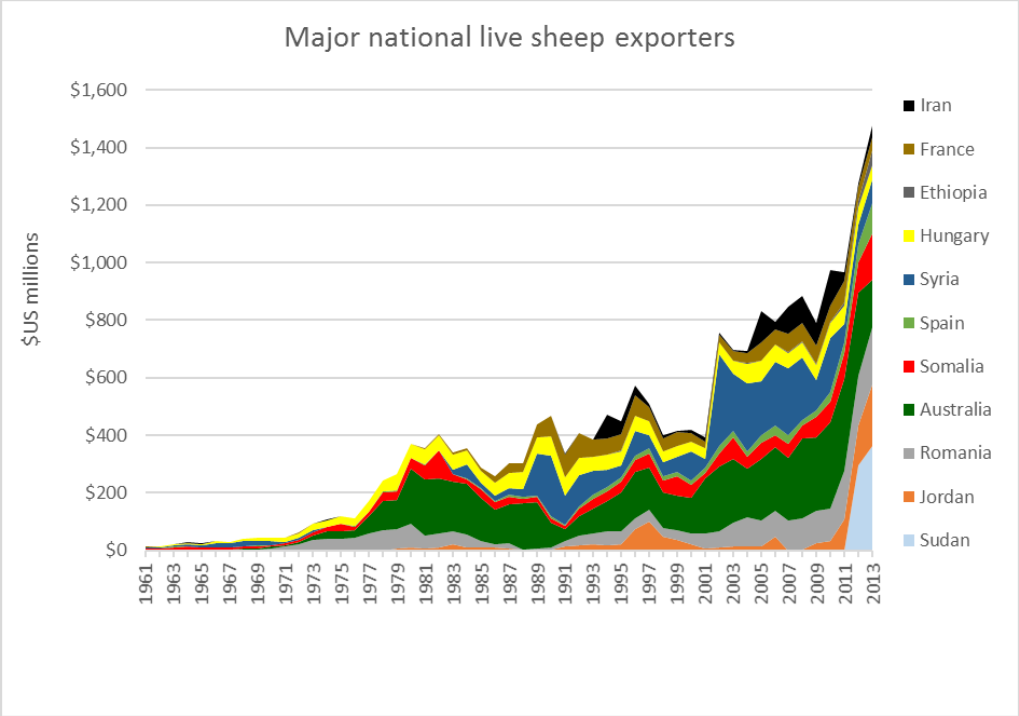


Figure 10. Value of live sheep exports by major exporting nations. (Source: FAO)

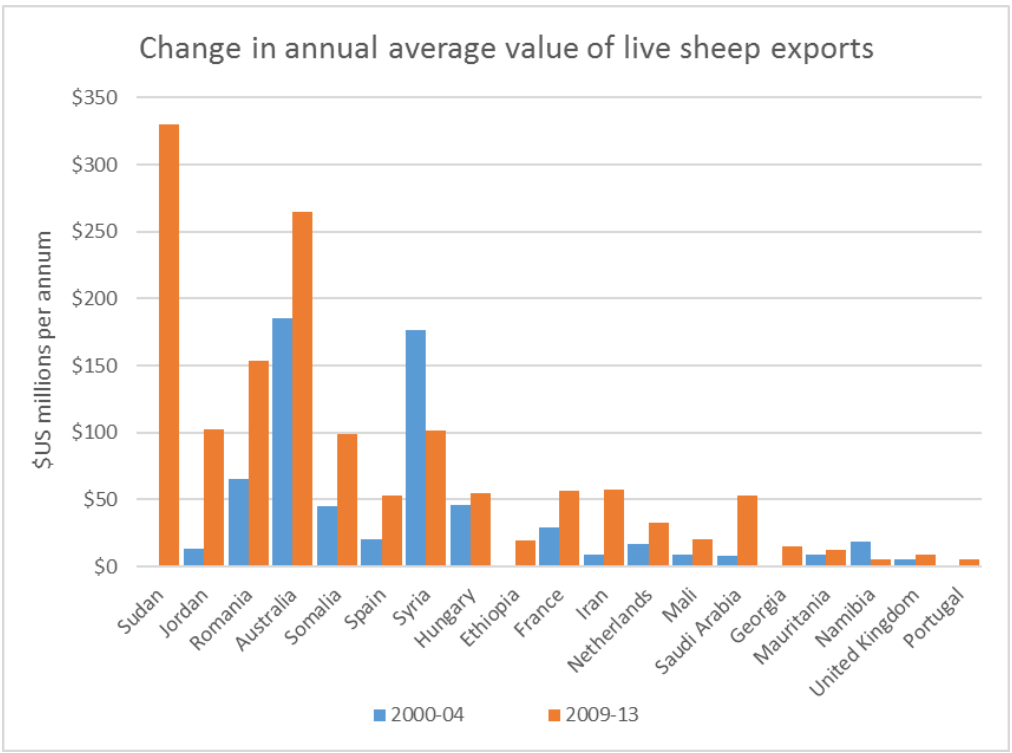


Figure 11 Change in the annual value of national live sheep exports over the past decade. (Source: FAO)

The market for live sheep imports is dominated by Saudi Arabia, although at different times there have been a number of other Middle Eastern nations that have been major importers. Australia currently does not export live sheep to Saudi Arabia, because that nation does not have supply chain arrangements in place that meet the standards required under the Exporter Supply Chain Assurance System (ESCAS) implemented by Australia in late 2011.

Under this system, Australian livestock exporters may only export live animals to nations and markets which meet specific animal welfare standards, and which have arrangements in place to enable the exporter to retain control over the livestock prior to slaughter, to prevent leakage to non-accredited supply chains.

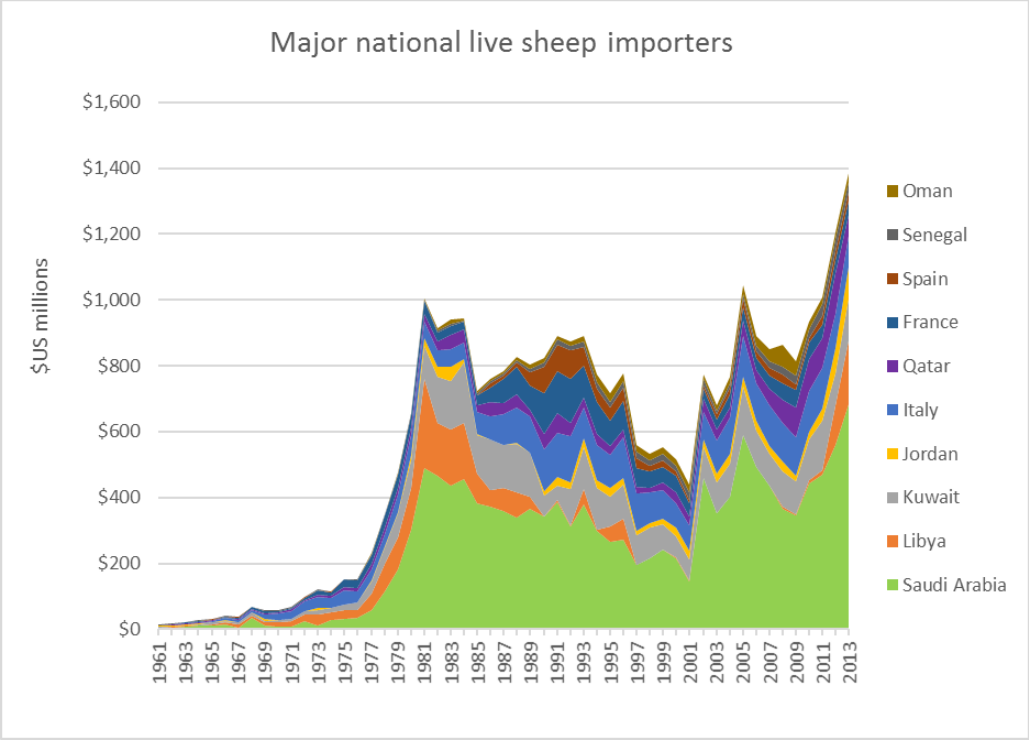


Figure 12 Value of live sheep imports by major importing nations. (Source: FAO)

Trade in live goats.

The global value of live goat exports was valued at approximately $US 324 million in 2013. The trade is dominated by Middle Eastern and North African nations, with India and Australia the only two participants in this trade not being from either of these two regions. Somalia, Oman and Syria have all been significant sources of live goat exports, although it is likely that exports from Syria would have been severely disrupted in recent years.

Saudi Arabia, Oman and the United Arab Emirates have been major importers of live goats at different times, although as can be observed from the following figures, there is a high level of volatility associated with the trade in live goats.

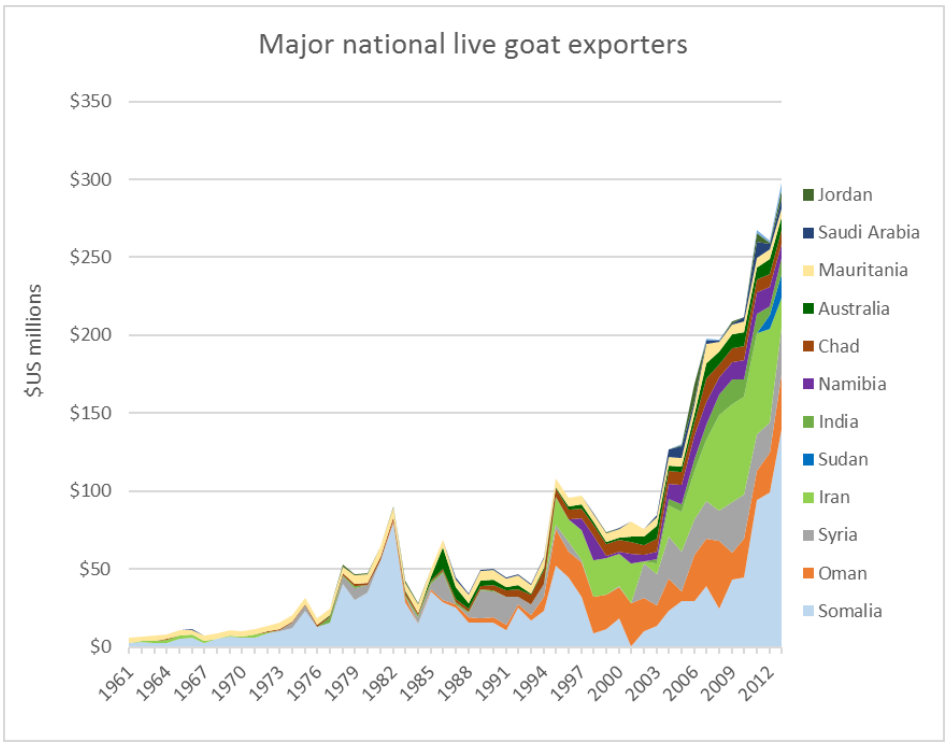


Figure 13 Value of live goat exports by major exporting nations. (Source: FAO)

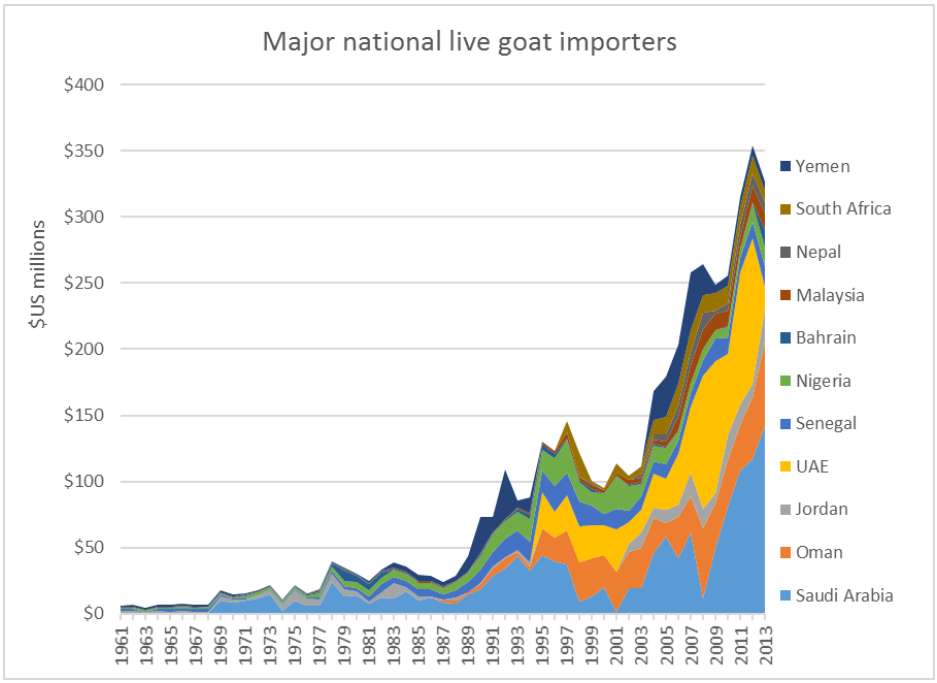


Figure 14 Value of live goat imports by major importing nations. (Source: FAO)

3. Regulation of international livestock trade.

Trade in live animals brings with it a number of unique disease and welfare issues, that are not present in the case where trade involves animal products such as meat or hides. Of particular interest to citizens of developed nations is the welfare of the live animals once they have been exported from their nation of origin. The focus of this concern has been on the conditions experienced by the animals during transit, and on the subsequent animal welfare standards applied from the time the animal has landed in the destination country up until the animal is slaughtered. There have also been concerns expressed about the longer-term welfare of animals destined to be used in importing nations for breeding or dairy production.

OIE.

Regulatory responsibility for the welfare of exported animals essentially lies with the relevant authorities of the nation that livestock have been exported to. At a global level the World Organisation for Animal Health (Office International des Epizooties or OIE) is the intergovernmental organisation responsible for improving animal health worldwide, including in relation to animal welfare. It is recognised as a reference organisation by the World Trade Organization (WTO) and sets the international animal health standards and animal welfare standards.

OIE members (over 180 nations) have mandated the organisation to take the lead internationally on animal welfare and to develop recommendations and standards covering animal welfare practices.

The OIE Terrestrial Animal Health Code 2010 (the OIE Code), provides considerable detail on standards associated with the humane treatment of animals during transport, holding and slaughter. Since 2005, four standards relating to the humane treatment of animals have been formally adopted by OIE members. The four standards are:

Transport of animals by sea;

Transport of animals by land;

Transport of animals by air; and

Slaughter of animals.

The OIE encourages its member nations to adopt domestic animal welfare requirements and regulations that are consistent with the OIE's animal welfare requirements, although it has no power to require that governments adopt these standards.

The OIE facilitates the development of international codes dealing with sanitary and phytosanitary (SPS) standards and animal welfare standards associated with the live export trade. The codes establish and document the consensus among veterinary authorities of the 180 member nations and form the basis of the international standards within the WTO Agreement on the Application of Sanitary and Phytosanitary Measures. (The OIE 2015)

The OIE also provides guidelines on setting measures derived from the code. The OIE encourages members to use its international standards wherever possible. If there is no international standard of a country wishes to apply stricter regulation the OIE promotes the use of scientific based assessment and accepted risk assessment techniques. (The OIE 2011)

Australia's Department of Agriculture and Water Resources enforces the 'Australian Standards for the Export of Livestock' which are aligned with standards and guidelines laid out by the OIE. According to the Australian Position Statement on the Export of Livestock, the standards pertaining to welfare often exceed those of the OIE.

Australia is leveraging its position as a major exporter to lift international standards on animal welfare conditions in major Middle Eastern importing nations particularly on disembarkation and animal handling issues. Australia's exporting bodies are working with the OIE Regional Commission for the Middle East and the Gulf Cooperation Council to develop strategies advancing animal welfare. (Australian Government Department of Agriculture 2006)

Ultimately the OIE aims to bring transparency and evidenced based decisions to SPS measures. This serves both to instill confidence in the biosecurity of the live export trade and to discourage rampant abuse of SPS measure to enact protectionist technical barriers to trade.

World Trade Organisation

The World Trade Organisation's main function is to ensure smooth and transparent trade flow. To this end it has tried to address protectionism via arbitrary SPS measures within The Technical Barriers to Trade Agreement. The international standards set by the OIE form a default set of measures promoted by the WTO. The WTO permits stricter measures only where there is scientific justification or sufficient doubt around biosecurity assurances. (World Trade Organsiation 2015)

More generally, The WTO encourages 'freer trade: gradually through negotiation', which encompasses quotas and pecuniary restrictions on agricultural trade. Among the key objectives of the WTO is binding of tariffs and promoting transparency and predictability in setting of tariffs and protectionist measures. The WTO promotes economic reform and trade liberalization. These areas represent a significant challenge for developing countries often transitioning into market economies. Such countries also happen to be major importers of live animals from Australia. In particular, Indonesia and the Middle East. (World Trade Organsiation 2015)

Australian livestock export standards.

As noted, Australia has a long history of livestock exports, and has also been at the forefront of the development of standards to improve the welfare of domestic animals during transport, holding and slaughter processes.

At an international level, the OIE *Terrestrial Animal Health Code* stands as the key reference point in relation to standards of animal welfare adopted and applied by nations involved in export of livestock.

The correlation between The OIE *Terrestrial Animal Health Code* and the standards that are mandated by the Australian Government for livestock exports has recently been the subject of a detailed review (Schipp and Sheridan, 2013). The review analysed the extent to which the two components of the Australian livestock export regulatory framework – The Australian Standards for the Export of Livestock (ASEL) and the Exporter Supply Chain Assurance System (ESCAS) – give effect to the animal welfare standards that are detailed in the OIE Code.

The ASEL was developed in 2004 by government and industry groups, and has been regularly reviewed and updated since that time. The standards associated with the ASEL are given legislative effect under the Australian Meat and Livestock Industry Act 1997. This act specifies that livestock can only be exported from Australia by the holder of a licence to export livestock. Compliance with the ASEL is a condition of such a licence, and sanctions can be imposed on a licence-holder under this act or the Export Control Act 1982 if there is evidence the ASEL has not been adhered to. To increase the transparency surrounding the performance of exporters, this legislation also requires the mandatory reporting of mortality rates on each shipment, and this information is reported to Parliament every six months. In addition, any breach of the ASEL also triggers a Departmental investigation, which also results in a report to the Parliament.

The ASEL imposes obligations on a Livestock Exporter from the stage of livestock procurement to their point of disembarkation at an export destination, but does not apply beyond that point. As a consequence of the 2011 incidents associated with the slaughter processes for Australian cattle in Indonesia, a review was commissioned of Australia's controls over the animal welfare of exported livestock (the Farmer Review). One of the key recommendations of that review was;

> *The minimum requirement (in relation to livestock welfare) should be that all elements of the supply chain must meet, at a minimum, the OIE standards; that animals entering a supply chain must be accounted for; that there be independent third party assessment of each supply chain; and that the exporter demonstrate whole of supply chain control, enabling accounting for animals and ensuring treatment according to OIE standards."*
> (Farmer, 2011)

In order to give effect to this recommendation, the ESCAS was developed, and under the Australian Meat and Livestock Industry (Conditions on livestock export licences) Order of 2012, livestock exporters must comply with the AESL and ESCAS as a condition of their licence from 1 January, 2013.

The animal welfare checklists associated with ESCAS cover the management of animal welfare risks associated with post-disembarkation in the export destination, including handling livestock, land transport, feedlots, lairage and slaughter, and are based on the relevant requirements of the OIE *Terrestrial Code.*

Under ESCAS the exporter must demonstrate, through a system of reporting and independent auditing:

- animal handling and slaughter meets World Organisation for Animal Health (OIE) animal welfare standards (Animal welfare)
- the exporter has control of all supply chain arrangements for livestock transport, management and slaughter, and all livestock remain in the supply chain (Control)
- the exporter can trace or account for all livestock through the supply chain (Traceability).

Exporters are required to submit two independent audit reports to demonstrate the supply chain complies with the requirements of the OIE standards. The first is an independent audit report of the proposed supply chain that is submitted as part of the application to export livestock, and the second is an independent performance audit report after livestock have entered the supply chain. Exporters are also required to submit an 'end of processing report' for cattle and buffalo consignments, which reconciles the National Livestock Identification Scheme (NLIS) tag information of the animals exported with the animals slaughtered.

ESCAS was subject to a comprehensive review by the Australian Government in 2015. (Australian Government, 2015). The review made a number of findings and recommendations, noting that the task of implementing a system to manage the welfare of livestock in overseas jurisdictions was a significant challenge. Among the findings of the review were the following;

- *To 30 November 2014, 8 million head of feeder and slaughter livestock in 1,139 consignments have been exported under ESCAS from Australia to 18 countries by 21 exporters. A total of 866 establishments in 19 countries (including facilities in one country yet to receive ESCAS livestock) had been independently audited as being OIE compliant. The rate of pre-slaughter stunning has increased. For example, over 80 per cent of facilities in Indonesia that receive Australian cattle practice pre-slaughter stunning.*
- *From implementation of ESCAS in 2011 to 30 November 2014, there have been 59 incidents of noncompliance with ESCAS requirements confirmed by the Department of Agriculture—47 per cent detected by the Department of Agriculture, 31 per cent self-reported by exporters, and 22 per cent reported by others. Thirty-seven incidents related to issues where there was no direct animal welfare impact but instead were problems with control, traceability or auditing arrangements. Of these, 23 were for movement of livestock outside the supply chain nominated on the ESCAS paperwork to facilities that have been audited and are OIE compliant, with no compromise of animal welfare.*
- *Despite its successes, the regulatory model for ESCAS is complex and imposes costs of over $17.6 million a year on government and the industry. The question remains whether the same gains in animal welfare could have been made through a simpler, clearer and ultimately cheaper system.*
- *ESCAS has increased awareness of the importance of animal welfare for livestock handling in Australia's export markets. This has benefited not only Australian animals but also those sourced from other countries. These improvements have been driven by investments in*

training and infrastructure from the Australian Government, industry and industry-funded research and development corporations. ESCAS has reportedly provided a significant 'pull factor' that has seen increased participation in these programs further down the supply chain.

The results achieved under ESCAS are of great significance, not only for the welfare of livestock exported from Australia, but also for the welfare of livestock more generally in export destinations. While some might criticise the number of noncompliance incidents, it needs to be remembered that the majority of these involved administrative failures rather than specific animal welfare incidents, and also that in the context of what ESCAS aims to achieve in overseas jurisdictions, to have only this number of incidents is an extraordinarily positive outcome.

The ESCAS is globally unique, and Australia is also the only nation that funds and provides training and support programs which aim to improve animal welfare standards in export destinations. A consequence of both these is that Australia is a very active and positive contributor to improved animal welfare standards in destination nations, something which is acknowledged by reviews and by international agencies.

4. Australia's role in global livestock markets.

As a nation with a significant livestock production sector and a relatively small domestic market, Australian livestock industries have long relied on export markets, and that continues to be the case. It is estimated that in excess of 75% of beef produced in Australia is exported, 57% of sheepmeats is exported, and 95% of goat meat produced in Australia is exported. In addition to processed meat exports, Australia has long been a source of livestock exports, in response to government and consumer preferences in Asian and Middle Eastern markets.

Live cattle exports from Australia commenced in the 1960s, although export number remained relatively modest until the mid-1990s when demand for red meat began to grow in Asian markets. Political and other developments both in Australia and in destination markets have resulted in occasional large fluctuations in annual export numbers, most recently in 2011 when the Australian Government suspended the export of live cattle to Indonesia – which was then a major market. Live cattle exports have recovered to approximately 1.3 million in 2015, valued at approximately $A 1.5 billion.

Live sheep exports grew rapidly during the 1970s, as a result of strong sheepmeat demand emanating from Middle Eastern nations, and the relatively large sheep flock present in Australia, especially during the 1980s. The trade was interrupted by the turmoil associated with the cessation of the Wool Reserve Price Scheme in 1991 and associated initiatives such as the flock reduction scheme which resulted in the culling of 10 million sheep. It recovered somewhat during the mid-to-late 1990s, but the continuing decline in the size of the Australian sheep flock in combination with a switch by many woolgrowers to prime lamb production reduced the supply of merino wethers suitable for the live export trade, and annual sheep exports have been steadily declining since that time. In 2015, Australia exported 1.96 million live sheep, valued at $246 million.

The live goat export industry is based almost entirely on the harvest of feral goats from Australia's rangelands. Trade volumes have fluctuated around the 80-90,000 head figure for some time, with Malaysia being the dominant market. The numbers of goat shipped annually is strongly influenced by price, with higher prices encouraging landholders to muster or trap greater numbers for subsequent export. In 2015, Australia exported 90,190 live goats, valued at $10.32 million.

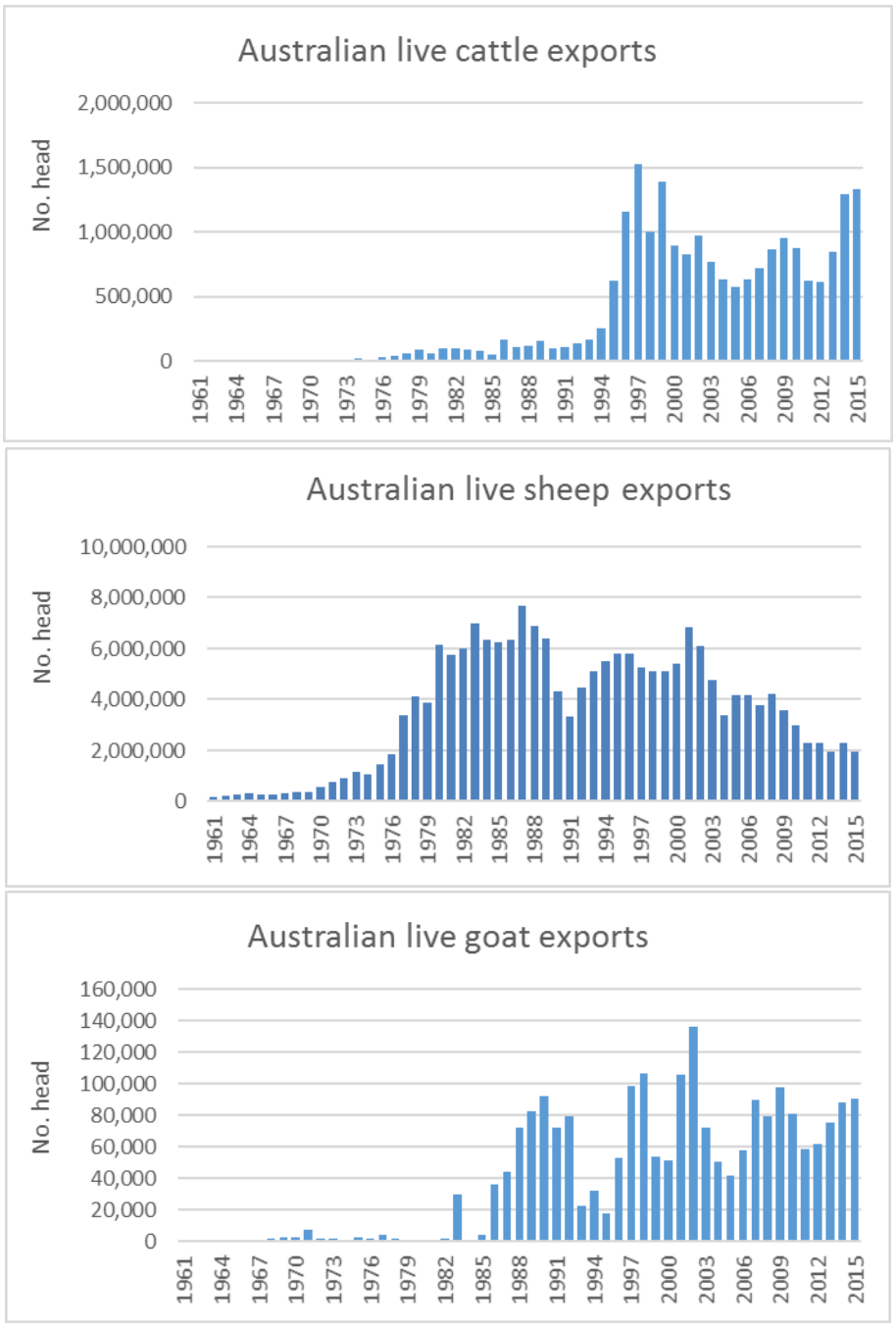


Figure 15. Australian live cattle, sheep and goat exports. (Source: FAO, ABS)

Live cattle.

Live cattle exports from Australia are sent to a number of Asian and Middle Eastern markets, including the Russian Federation. In 2015 a total of 1,227,298 slaughter cattle were exported, as well as a further 104,079 beef and dairy breeder cattle, destined for use in domestic cattle production sectors in destination nations. Indonesia has been the dominant market for some time, accounting for approximately 50% of total exports, although subject to considerable volatility as

a consequence of both Australian and Indonesian Government policy decisions at different times. Particularly noteworthy was the reduction in exports to Indonesia in 2011-12 as a consequence of the decision by the Australian Government to suspend live exports to that nation for a period. They were resumed subsequent to the development of the Exporter Supply Chain Assurance System (ESCAS) which required Australian exporters to only ship cattle to accredited overseas facilities and supply chains, and to ensure that the animals remained under the control of those and were not transferred into other supply chains or markets.

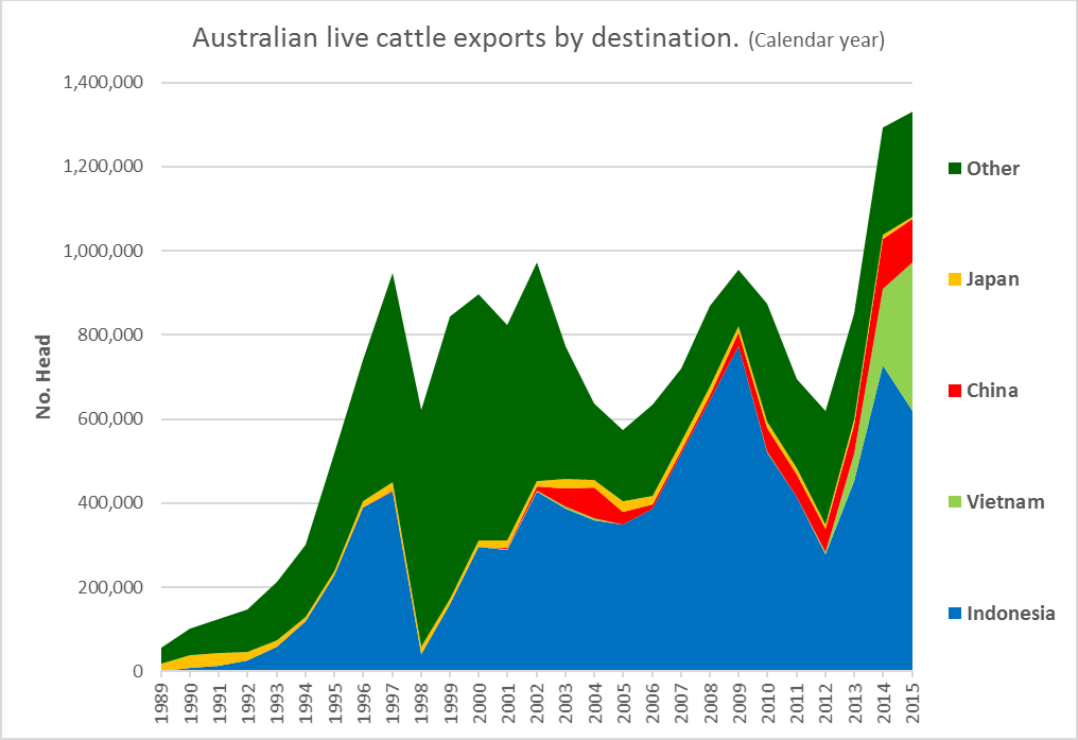


Figure 16. Australian live cattle exports by destination. (Includes breeder cattle). (Source:ABS)

Indonesia has been the most important market for Australian live cattle exports for most of the past decade, however the most notable feature of recent trade statistics is the emergence of Vietnam and China as rapidly growing markets.

Exports to China have grown steadily since 2008. Live cattle exports from New Zealand are nominally the most significant competition for Australian live cattle exports in that market, although New Zealand exports are limited to breeding and dairy cattle, rather than slaughter cattle. Competition is emerging from Uruguay, and the USA and Canada have also been suppliers of live cattle to China in the past. Australia was the single largest supplier of live cattle to Viet Nam in 2014, although New Zealand, Thailand and Colombia have supplied cattle over recent years. Australia is also the dominant supplier of live cattle to Indonesia.

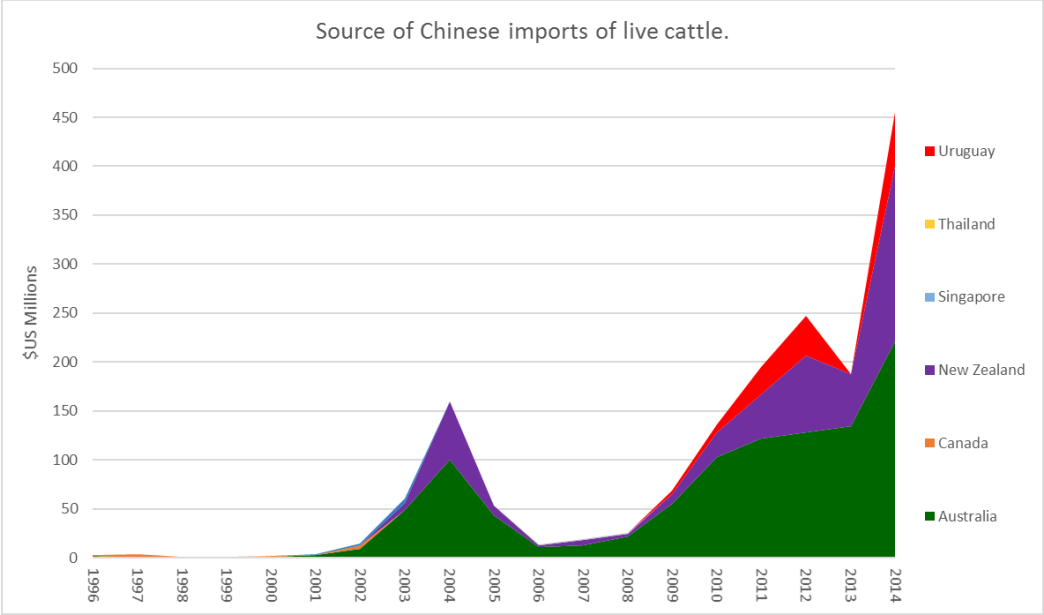


Figure 17. Chinese live cattle imports by source. (Source: UN Comtrade)

In global terms, Australia's market share of world live cattle exports has ranged between 7 and 12% over the last twenty years. Mexico and Brazil have emerged as major suppliers, and what is also evident from the available data is that there is a growing diversity of nations (a total of 46 nations exported live cattle valued at more than $US 5 million in 2014) becoming involved in live cattle exports, as agricultural trade barriers are reduced.

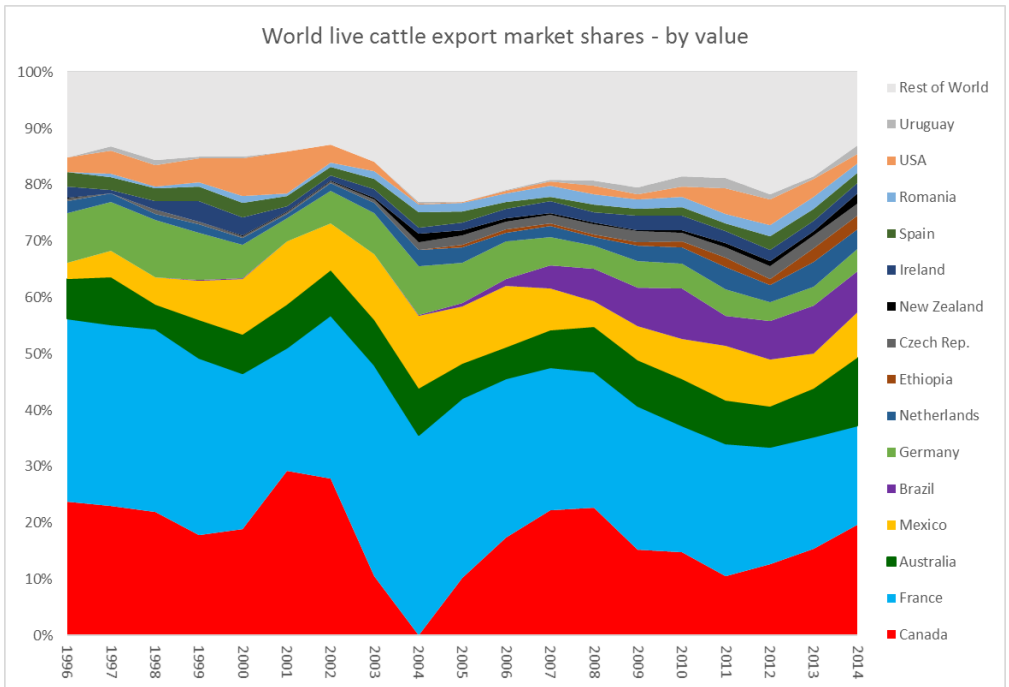


Figure 18. National market share of world live cattle exports by value. (Source: UN Comtrade)

Live sheep.

Australia has been an exporter of live sheep since the early 1970s, with destination markets predominantly being Middle Eastern nations, although China and Malaysia have also been minor markets at different times. Approximately 95% of Australian current (and past) live sheep exports by value are sent to Africa and the Middle East. Livestock trade into these region is largely unaffected by trade barriers. The three largest export destinations, Kuwait, Qatar, and Jordan all have no tariffs or quotas (World Trade Organsiation 2015).

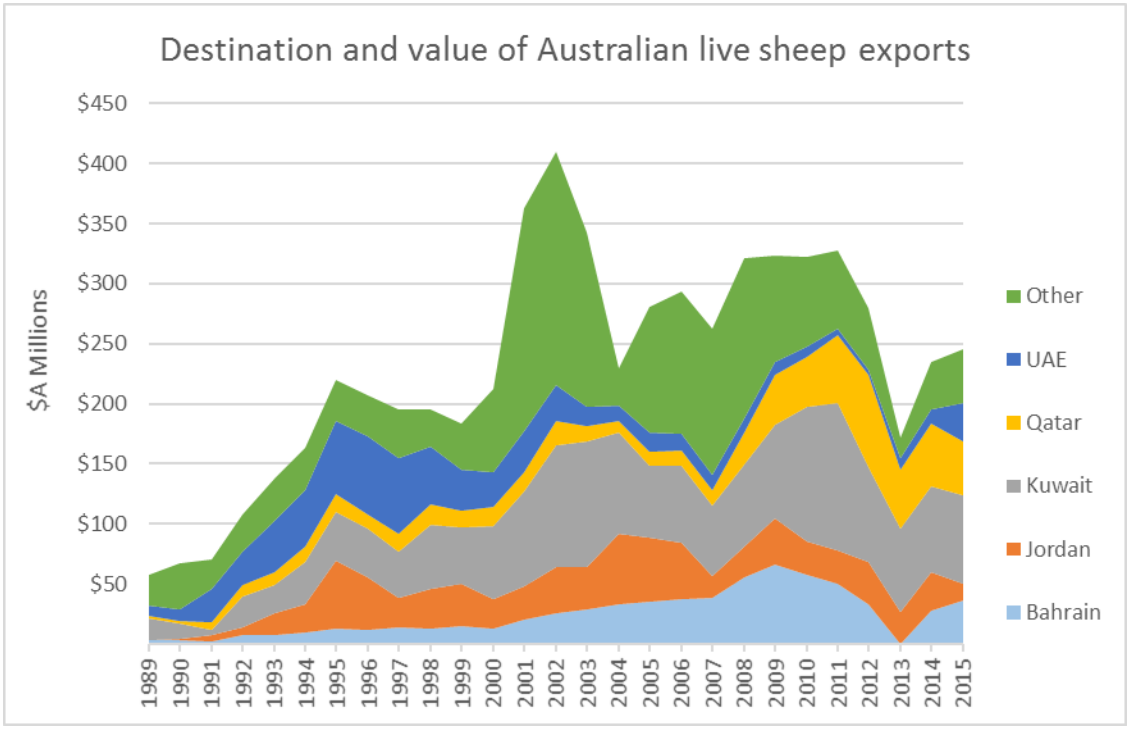


Figure 19: Destination and value of Australian live sheep exports. (Source: ABS).

Saudi Arabia has previously been a major export market for live sheep from Australia (included in the 'Other' category in the above graph). However, since the introduction of ECSAS in late 2011, Australian live sheep exports to this nation have ceased because the Saudi Arabian Government has refused to accept what it regards as a compromise to its sovereignty. Saudi Arabia has switched to sourcing live sheep from nations such as Jordan, Ethiopia and Sudan, as the following figure highlights.

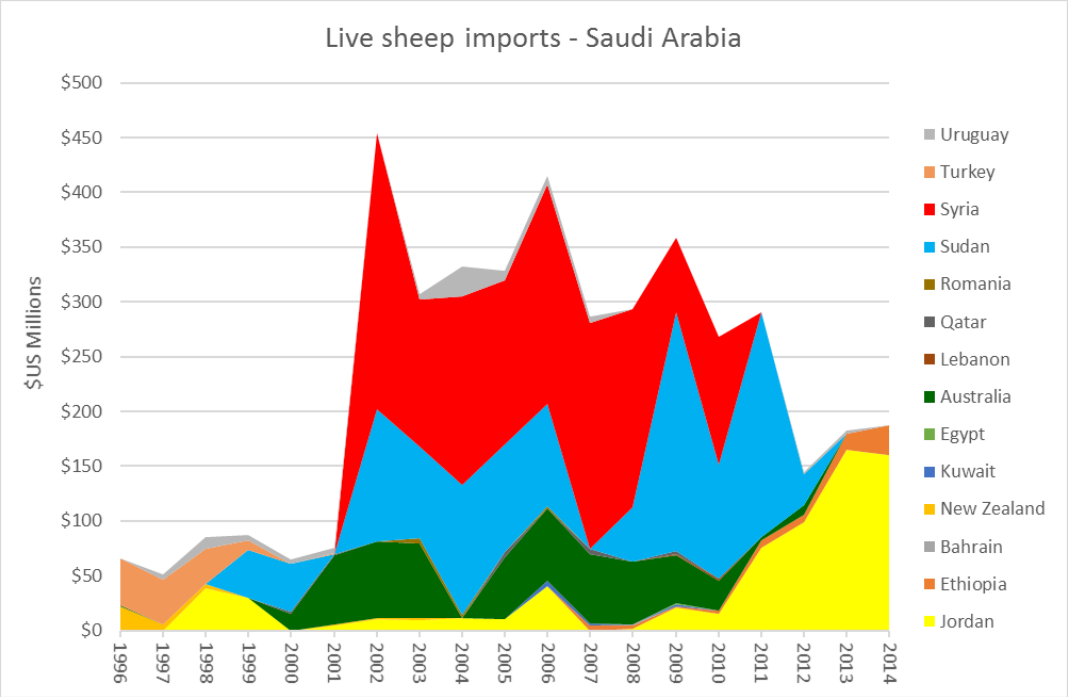


Figure 20. Origin of Saudi Arabia live sheep imports. (Source: UN Comtrade)

Somali, Sudanese and Romanian live sheep exporters are the major competitors that Australia faces in supplying live sheep to the Middle East, and these nations have quickly expanded exports as Australian live sheep exports have declined. The value of Romanian and Spanish live sheep imports by Middle Eastern nations has increased rapidly since 2010 due to combination of overall export growth in demand by those two nations and a shift in exports away from other European countries to the Middle East.

Figure 21 displays the changing market share of the various nations supplying the live sheep markets of the Middle East since the 1990s. Australia has long been the dominant market supplier, however post-2011 (when ESCAS was introduced), Middle Eastern nations quickly switched to alternative sources of supply, to the extent that Australia now supplies only around 40% of the live sheep imported by these nations. Figure 22 shows that Romanian and Spanish live sheep exporters have switched from supplying the European market to become major suppliers to the Middle East.

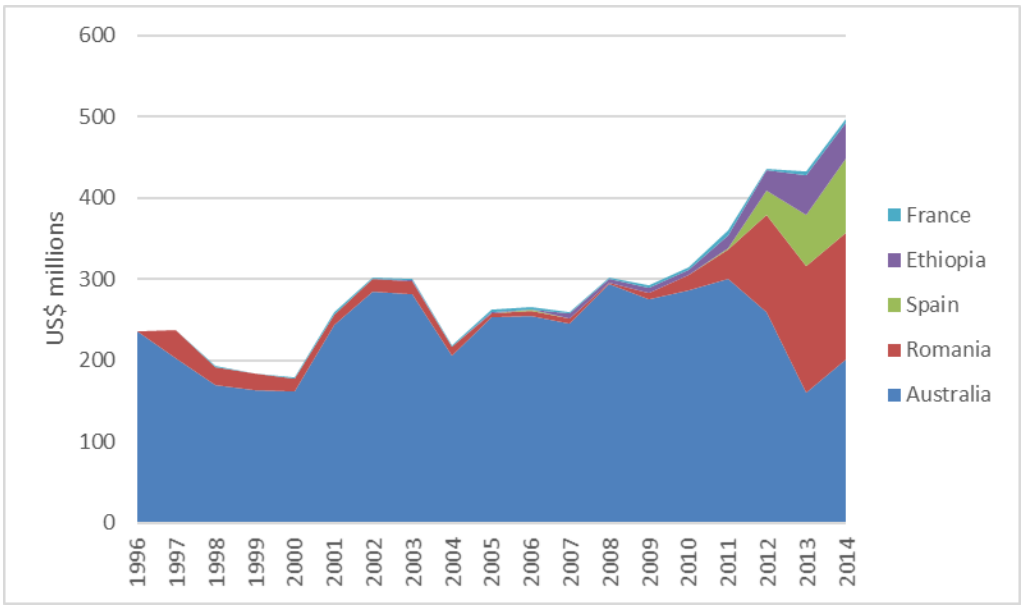


***Figure 21*: Source of live sheep imports by Middle Eastern nations. (Source: UN Comtrade)**

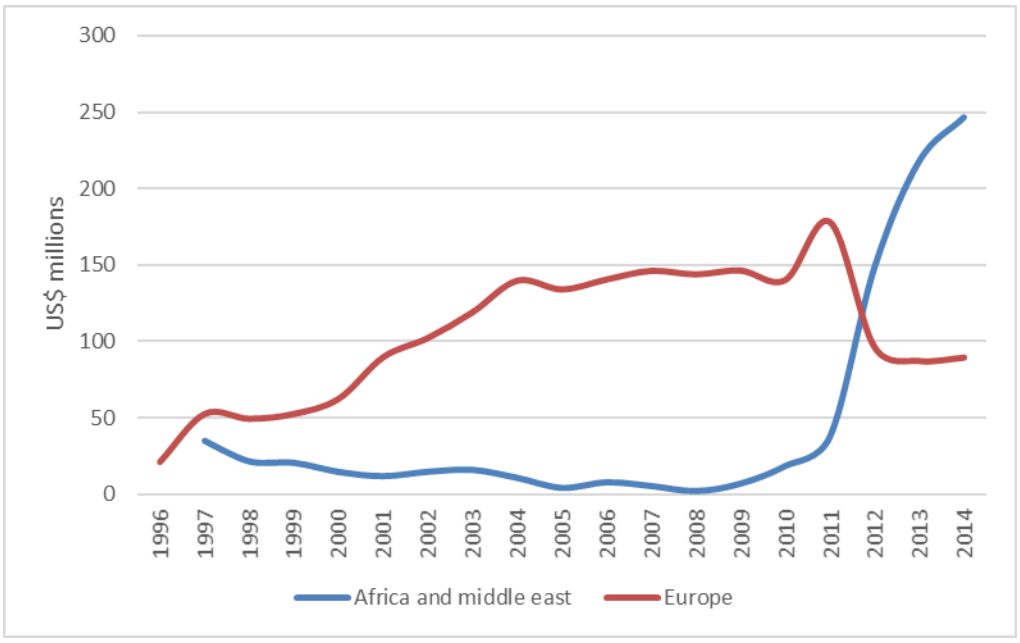


Figure 22: Destination of Romanian and Spanish live sheep exports. (Source: UN Comtrade)

Both Romania and Jordan overtook Australia as the world's leading live sheep exporters in 2012, and Spain and Ethiopia also emerged as rapidly growing sources of live sheep exports over the same period, as can be observed in Figure 20.

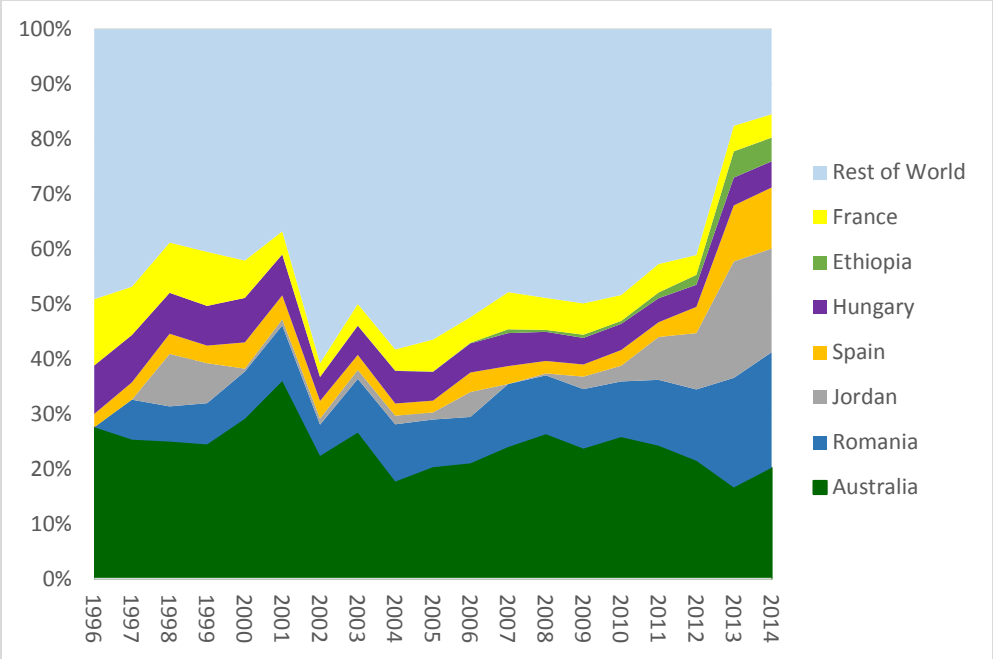


Figure 23*:* National market share of global live sheep exports by value. (Source: UNComtrade)

Live goats

Australia is a relatively small-scale supplier in terms of global live goat exports, with annual exports valued at approximately $10 million in a global market valued at approximately $150 million annually, although subject to major fluctuations. The dominant market for Australian live goat exports is Malaysia – with live goats either airfreighted direct to Malaysia, or transshipped via Singapore. In 2014, around 93% of Australian live goat exports were sent to Malaysia.

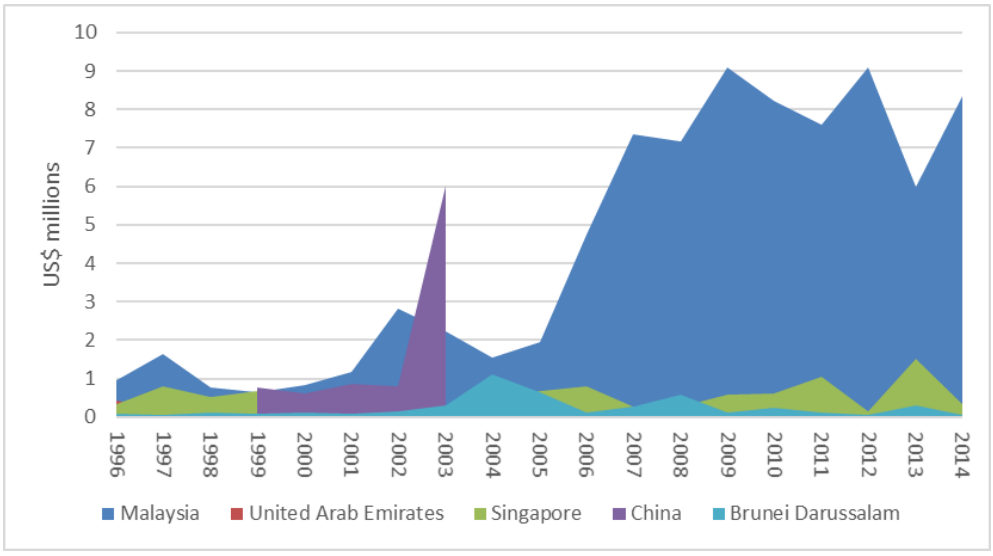


Figure 24: Value of Australian live goat exports by destination. (Source: UN Comtrade).

Australian exporters supplied the entire live goat market in Malaysia and Singapore in 2014, worth around US$8.7 million. In recent years, Australia's share of total Malaysia/Singapore live goat imports has been almost 100%, and there are no tariffs or quotas applied to the trade.

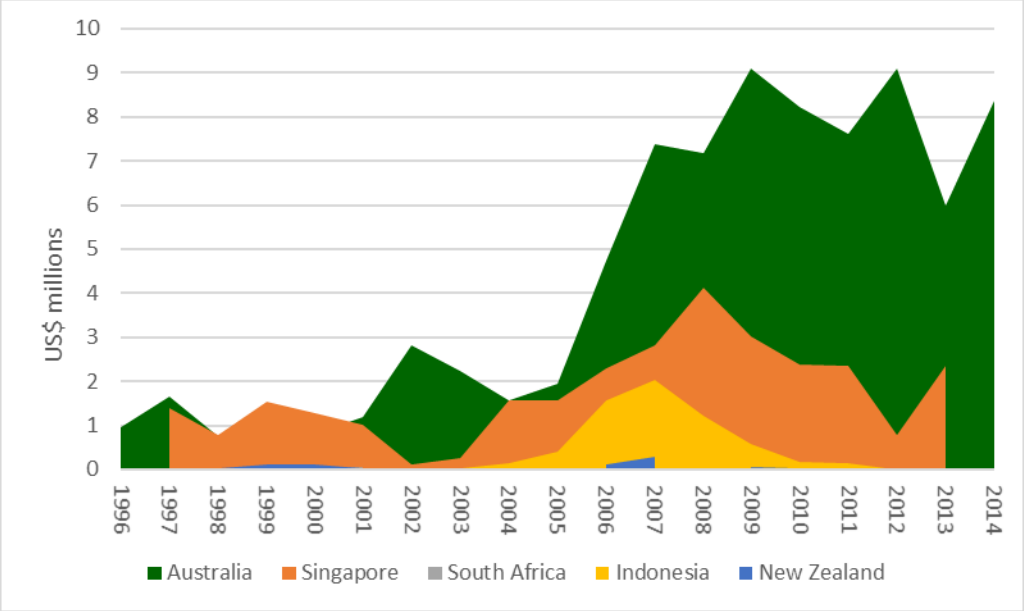


Figure 25: Source of live goat imports, Malaysia. (Source: UN Comtrade).

5. Australian livestock industries and markets.

The Australian broadacre livestock industries are renowned for being the source of high quality, safe and traceable food and fibre products, utilizing low-cost production systems which are highly efficient. As a consequence of collective industry efforts on quality, safety, productivity and traceability over many years, Australian livestock industries are currently very well positioned to take advantage of the burgeoning demand emanating from Asian and Middle Eastern consumers as well as from more traditional markets. The challenge facing the industry at present is not so much to find markets, but how to best take advantage of the multitude of market opportunities that are available, acknowledging limitations that exist to the supply of livestock and livestock products from Australia.

The demand from overseas markets for Australian livestock for slaughter or for production purposes is one important and growing component of the total economic value generated by the Australian livestock industries. In 2015, Australian livestock exports (both slaughter and breeding animals) were directly valued in excess of $A 1.7 billion.

This section of the report examines market factors that impact on the returns available to livestock producers in Australia, with a particular focus on the role of live exports as one important factor.

Beef cattle.

The Australian beef industry essentially commenced with the arrival of the First Fleet in 1788, when four cows and two bulls were imported from South Africa. These promptly escaped, but had multiplied to over 100 head when re-discovered seven year later. For the next 100 years the Australian cattle industry essentially supplied the domestic market for beef and milk, and it was not until refrigerated shipping commenced in 1879 that export markets opened up for the industry, and enabled it to expand to its current scale.

Britain was the major export market for Australian beef during the first half of the twentieth century, and more particularly so after World War II under a fifteen-year exclusive agreement. Britain's inclusion in the European Economic Community in 1960 forced the cessation of these preferential trading agreements. Australian beef exporters responded by focusing on the growing demand for grinding beef from America. Exports of Australian beef grew from 17% of domestic turnoff in the 1950's to 33% by the 1970's (MLA, 2015). Cattle producers responded to the expanding market opportunities by increasing the size of the national herd, which reached 33.4 million head by the mid-1970s.

Buoyant international beef demand during the early 1970s led to large increases in the size of cattle herds in the USA and South America, as well as Australia. The 1973 oil price shock resulted in a dramatic economic slowdown which reduced global beef demand and prices. Australian producers maintained cattle numbers in the hope of a quick recovery, and against a backdrop of good seasonal conditions. However, worsening economic conditions resulted in the

EU and Japan ceasing beef imports, and the USA and Canada implementing trade barriers to help their domestic beef producers. This caused a glut of beef in the Australian market which resulted in a price crash and a subsequent dramatic reduction in cattle numbers. Global markets had recovered by the early 1980s, but successive droughts in Australia meant that the cattle herd, which had declined to 22.1 million by 1984, was quite slow to rebuild. (MLA, 2015).

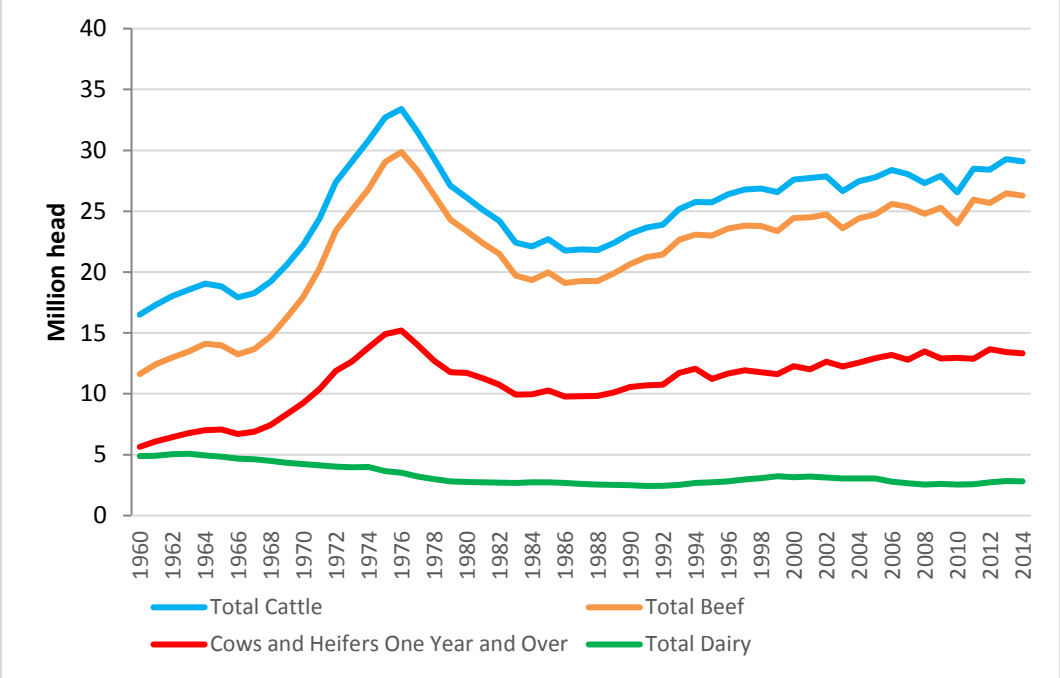


Figure 26. Australian cattle herd. (Source: ABS)

Live cattle exports developed in the northern parts of Australia following the restructuring of the cattle sector in the late 1970s and 1980s, partly as a consequence of the Brucellosis and Tuberculosis Eradication Campaign (BTEC) implemented by the Australian and State Governments at that time. These developments led to improvements in herd management, animal husbandry techniques and animal genetics. (Deards et al 2014). One of the main developments was the introduction of Bos indicus bloodlines (which were found to perform better in sub-tropical and tropical climates, on poorer quality pastures, and which also had greater parasite and tick resistance, and tolerance to heat). These were also ideally suited to the live export market, given the tropical location of most export destinations.

The 1990's saw herd numbers rebuild, with support from a depreciating dollar and average to good seasonal conditions. The Korean and Japanese markets opened up as a result of trade liberalization and the increased demand and better prices triggered increasing beef productivity. The outcome of the 1993 Uruguay round of the General Agreement on Tariffs and Trade (GATT) negotiations resulted in restrictive beef import quotas being replaced by tariffs. For example, the Japanese tariff on beef imports in 1991 was 70% but it was reduced to 50% in 1993. It was subsequently lowered to 38.5% in 2003, and to 32.5% in 2015 (with a commitment

to be reduced by 0.6% each year until 2030). Similar changes occurred in the Korean market, creating very important high-value opportunities for Australian beef exporters. (MLA, 2015)

Incidents of Bovine Spongiform Encephalopathy (BSE) in Europe 1996, in combination with a major E.Coli incident in Japan, resulted in the closure of some major beef markets to some exporters, and a downturn in global beef prices. Subsequent BSE incidents occurred in Japanese dairy cattle in September 2001, then in Canada in May 2003 and US in December 2003. As a result, Japan banned beef imports from the US and Canada, a ban that lasted until 2012. This resulted in additional export opportunities for Australian beef in the Japanese, Korean, US and Canadian markets.

The accession of China to the World Trade Organisation (WTO) in 2001 resulted in reduced Chinese tariffs on agricultural imports, and coincided with a period of rapid economic growth throughout Asia. This led to strong growth in demand for red meat in Asian markets, although a succession of drought years in southern Australia from 2003-2009, and the rapid appreciation of the Australian dollar exchange rate as a consequence of the mining boom resulted in reduced beef production and prices. The reduction in the $A exchange rate from mid-2011 resulted in increased beef prices in Australia, but this coincided with the cessation of live cattle exports. This, in combination with the increased turn-off of cattle for slaughter as northern beef herds were reduced in response to drought, depressed beef prices in Australia from 2012-2014, and it was not until slaughter rates peaked and then began to decline that Australian beef prices recovered (to a level relative to global beef prices) that would be normally be anticipated.

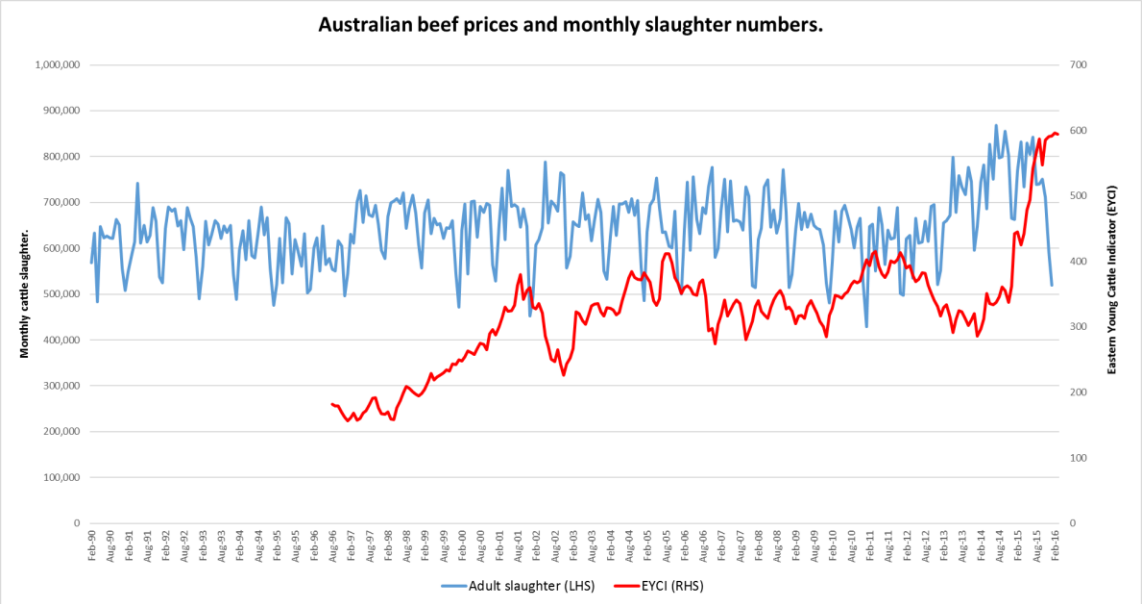


Figure 27. Australian beef prices and monthly slaughter rates. (Source: MLA)

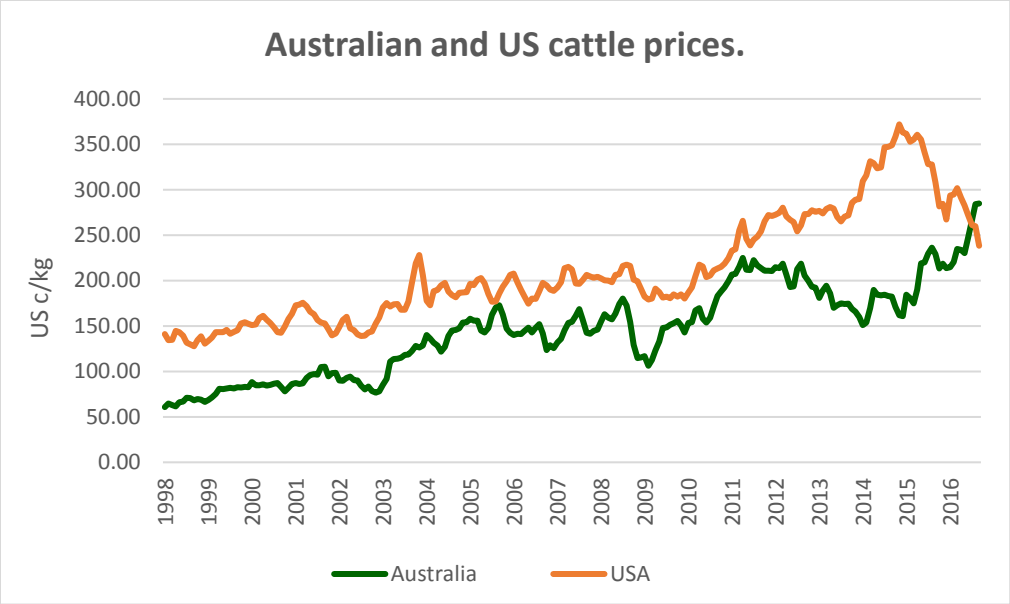


Figure 28. Comparison of Australian and US cattle prices. (Source: MLA)

The impact of the relatively high Australian cattle slaughter rates on Australian cattle prices is evident in figure 28, which compares Australian and US cattle prices for heavy slaughter steers over the past twenty years, in $US terms. The high slaughter rates in Australia coincided with the large relative decrease in Australian prices, with a recovery in relative price differentials only occurring once slaughter rates declined significantly in late 2015 and early 2016.

This has highlighted the importance of live exports for the cattle industry in Australia. A series of three failed wet seasons in Northern Australia forced cattle producers to reduce their herds, with most of these being lighter weight animals unsuited for the slaughter market. Australian beef processors were working at capacity during this period, with delays of up to four months common for producers wishing to have stock slaughtered. In the absence of the live export market, many of these animals would simply have been left on farms and would likely have perished due to lack of feed and water. Being able to sell these animals for live export enabled producers to generate revenue, reduced pressure on pastures (and therefore resulted in better natural resource management), and is also likely to have reduced the downward pressure on cattle prices caused by high turnoff rates.

It is also noteworthy that most of the live cattle exported during the 2013-14 period were from the three states with significant cattle populations in northern regions (Queensland, Northern Territory and Western Australia), which reduced pressure on southern markets. Many of these northern cattle producers do not have access to processing works unless they incur transport costs that can often exceed the value of livestock – especially drought-affected stock. Transport costs are a major expense for cattle producers in Northern Australia. Cattle producers in northern Queensland they are located over 1500km from major processors in Brisbane and western Mount Isa producers are at least 800 km from Townsville processor. (Groesch, 2015).

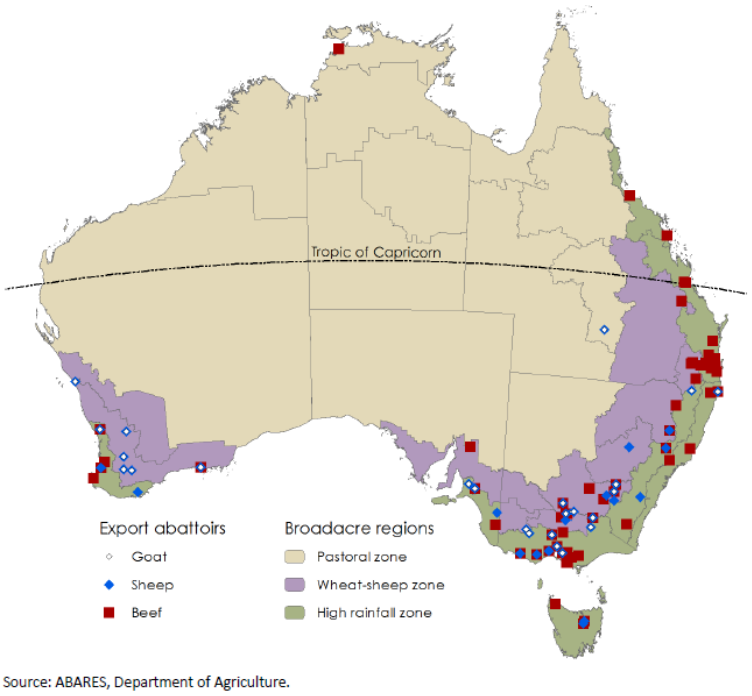


Figure 29. Location of Australian export beef processing facilities. (Source: ABARES)

The juxtaposition between the location of beef processing facilities, and the location of the farms supplying cattle for the live export market is evident in comparing the above map to the following map.

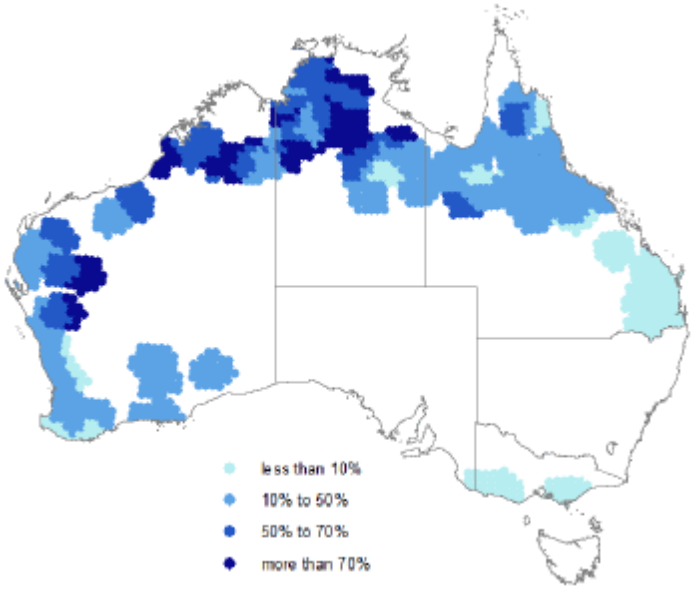


Figure 30. Proportion of total farm receipts from the sale of cattle for live export, 3 years ending 2012-13. (Source: ABARES)

Transporting cattle directly to live export ports incur less transportation costs and avoids the need for movement through tick zones, as well as delays associated with transport regulations that require stops for animal welfare and driver fatigue, all of which are necessary but which can significantly add to costs and erode profit margins.

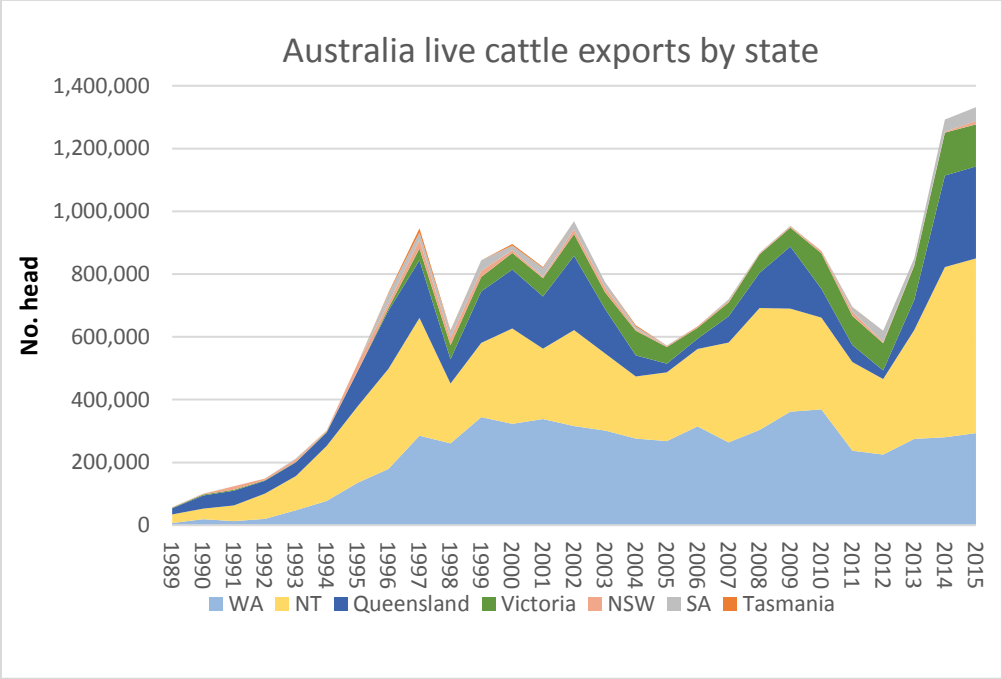


Figure 31. Australian live cattle exports by state. (Source: MLA)

As figure 31 highlights, the predominant source of cattle for the live export market has generally been the 'northern' states which have significant cattle populations in the northern half of Australia. This might lead to the presumption that cattle prices in southern Australia would generally be unaffected by events impacting on live export markets. However, as figure 32 shows, changes in beef cattle prices throughout Australia generally display a high level of correlation, probably due to the fact that there are large cattle populations in central latitudes which can access either the slaughter or the live export market, and do so depending on relative prices on offer in either. This also reinforces the fact that it is global beef prices that have a dominant impact on Australian cattle prices, tempered by exchange rates, Australian seasonal conditions and herd size trends.

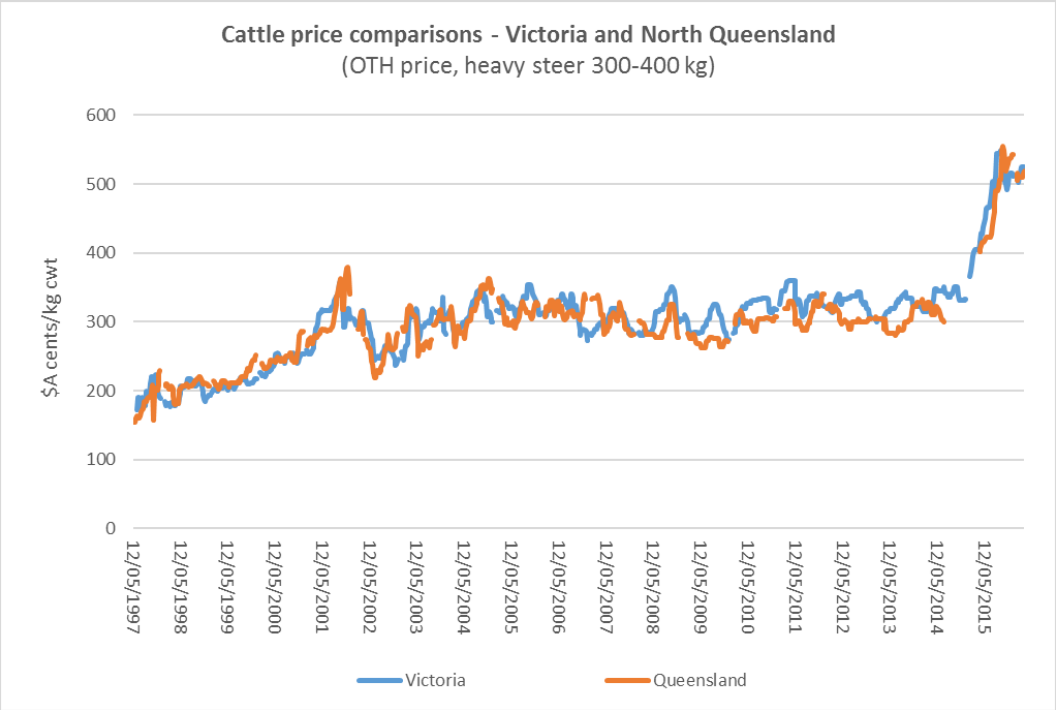


Figure 32: OTH cattle prices, Victoria and North Queensland. (source: MLA)

Beef cattle feedlots are also an alternative market for cattle producers in Australia, with the potential for light-weight and unfinished cattle to be marketed to feedlots for fattening prior to slaughter. Cattle feedlots have certainly been an important market outlet over recent years, with current capacity estimated at approximately 1.1 million head. In general, the feedlot sector in Australia has been operating below capacity, although during 2014 as drought triggered larger numbers of cattle being sold, capacity utilisation increased.

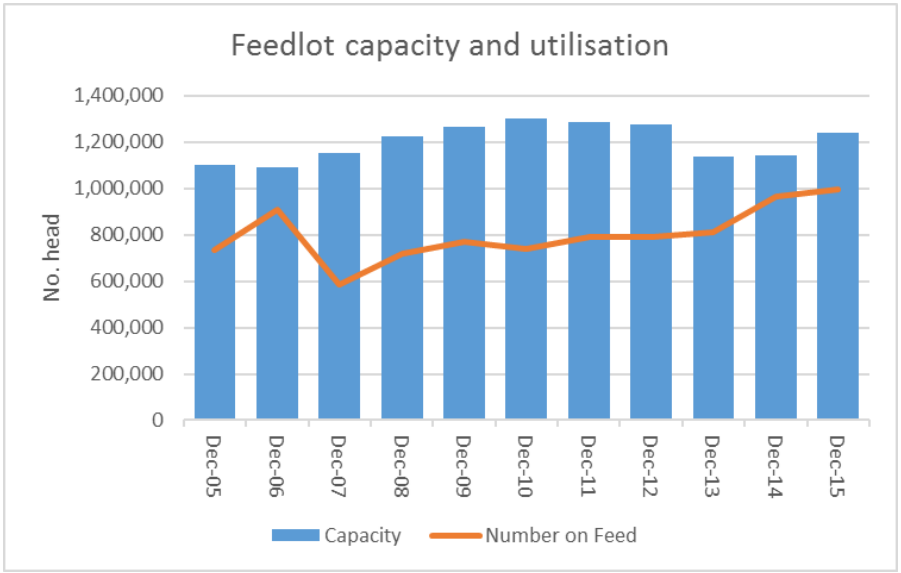


Figure 33: ALFA MLA cattle feedlot survey (source: ALFA)

There were close to one million cattle in feedlots at the end of 2015, and feedlots were operating at greater than 80% capacity. Feedlots have become an important market outlet for many, although they are not a viable option for many northern cattle producers due to their distant location, which is dictated by the need to be close to major grain production regions and processing works.

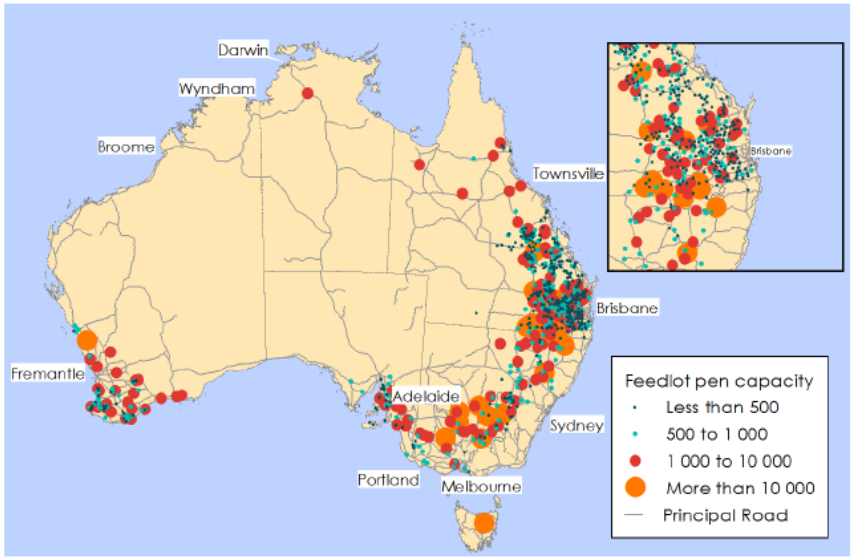


Figure 34. Location and capacity of Australian beef cattle feedlots.(Source: ABARES)

Just as the live export market has provided a very beneficial market outlet for some Australian beef cattle producers, so has the dairy heifer live export market been an important alternative market for dairy producers, especially those faced with low milk prices.

Dairy heifer exports have ranged from approximately 73,000 to 97,000 head annually, valued at between $170 and $216 million dollars per year. Over the last decade, there have been some 600,000 heifers exported to around 30 countries. (Dairy Australia, 2013). By far the most important market over recent years has been China, the destination for approximately 80% of dairy cattle exports. Other markets of lesser significance have included Pakistan, Russia, Indonesia, Israel and Sri Lanka.

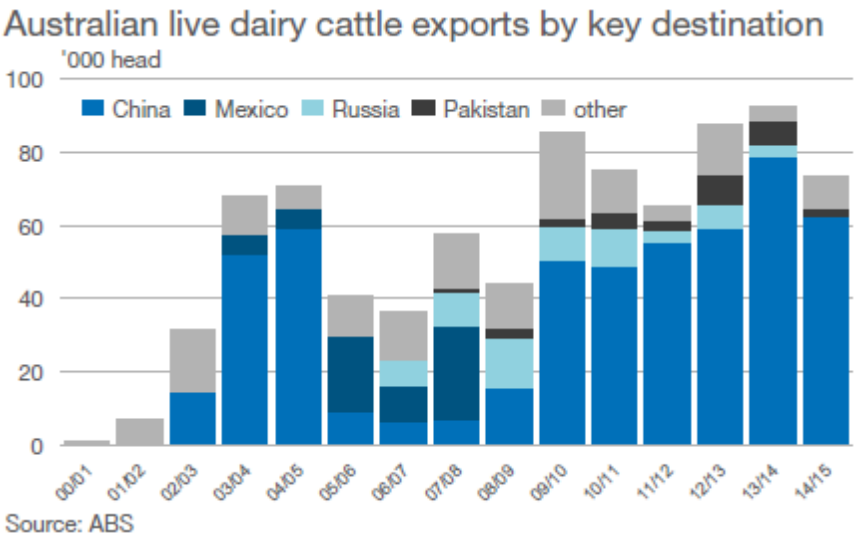


Figure 35. Australian live dairy cattle exports by destination. (Source ABS)

To a very limited extent there may be some interaction between the dairy and beef cattle markets, given that culled dairy cows and some excess dairy heifers sold by dairy farmers would normally be processed by Australian-based beef processors. However, the total number of dairy cattle in Australia has remained relatively steady at between 1.6 and 1.8 million head over the past decade, and the annual numbers of dairy cattle sold for slaughter seems unlikely to have changed greatly as a result of the numbers going to live export markets. If anything, the presence of the live export market for dairy heifers may provide an added incentive for dairy farmers to grow out heifer calves, rather than disposing of excess female calves at an early age.

Sheep

The emergence of the Australian sheep industry, along with the discovery of gold in the 1850s, was one of the major factors in the economic development of Australia during the nineteenth century. The sheep industry grew rapidly after the initial years of European settlement, with sheep ideally suited to grazing the vast areas of pasture land opened up by the early explorers. Wool was an ideal commodity to generate wealth for the developing nation, with strong export demand, and being a commodity that did not deteriorate despite the extended transport times associated with its movement from Australian farms to port and thence by ship to the United Kingdom.

The sheep industry was initially founded on wool production from merino sheep, and wool was one of the nation's major exports from 1871 right through to the early 1960s. The development of synthetic fibres such as nylon and polyester in the years after the second world war created growing competition and declining prices for Australian wool, which the industry attempted to respond to via the implementation of a number of different government supply and price controls commencing in 1972. These ultimately became the wool Reserve Price Scheme, which imposed minimum prices on wool. A failure by the industry to recognise that the wool reserve price was

too high resulted in the buildup of a wool stockpile that exceeded a full year's production, and which required woolgrowers to pay up to 25% of their wool receipts as a tax, just to service the accumulated debt.

Eventually, the Australian Government abandoned the Wool Reserve Price Scheme in February 1991, and the industry commenced the task of selling off the stockpile and repaying the accumulated debt. In the years immediately prior to the demise of the Reserve Price Scheme, the Australian sheep flock had reached approximately 170 million head. Following the deregulation of the wool market, measures such as the Flock Reduction Scheme were introduced, which paid farmers to cull some 10 million sheep. This, and the lack of profitability of the wool industry resulted in sheep numbers declining to approximately 100 million by 2001, and further declining to approximately 70 million head by 2015.

The annual numbers of live sheep exported has long been tied to the size and fortunes of the wool industry. Live exports traditionally created secondary cash-flow for sheep producers by providing a market for older wethers, which meet market specifications in key live export markets. However, as the size of the national merino flock declined, so too has the numbers of these available for live export.

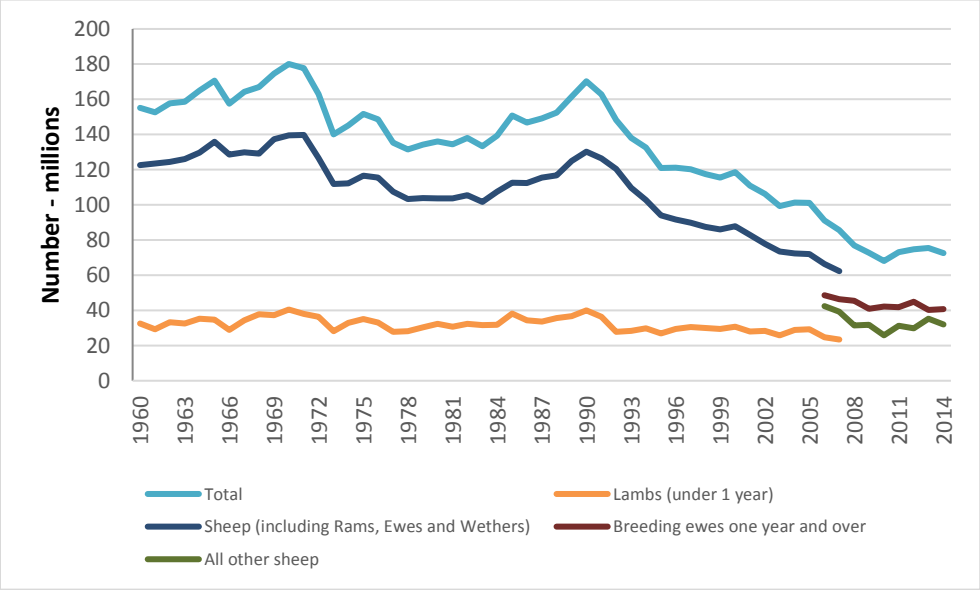


Figure 36: Australian sheep flock numbers (source: ABS/MLA)

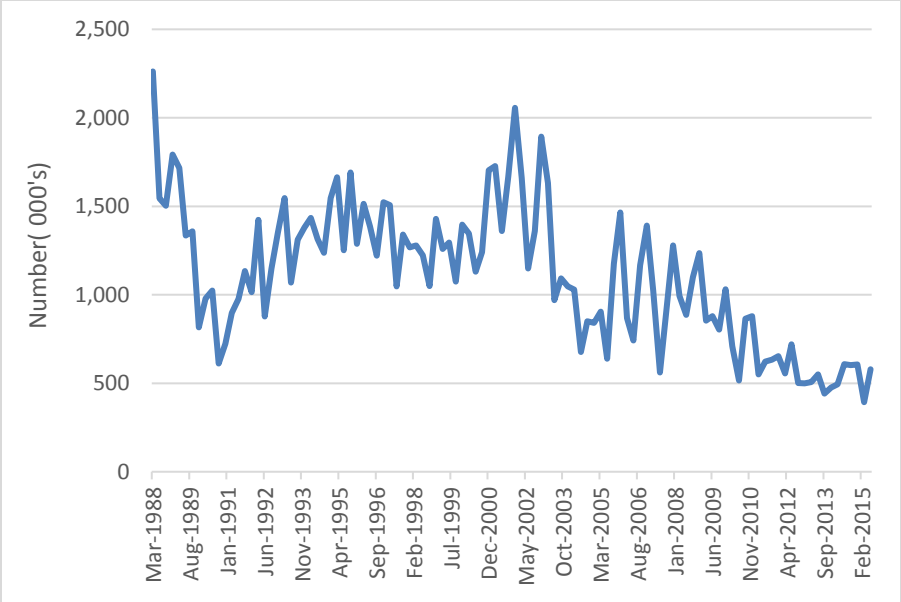


Figure 37: Monthly live sheep exports, Australia. (source: ABS/MLA)

The declining size of the national sheep flock has generally coincided with an increase in the price of merino wethers suitable for the live export trade, and also with an upward trend in the price of most classes of sheep, as Figures 37 and 38 highlight.

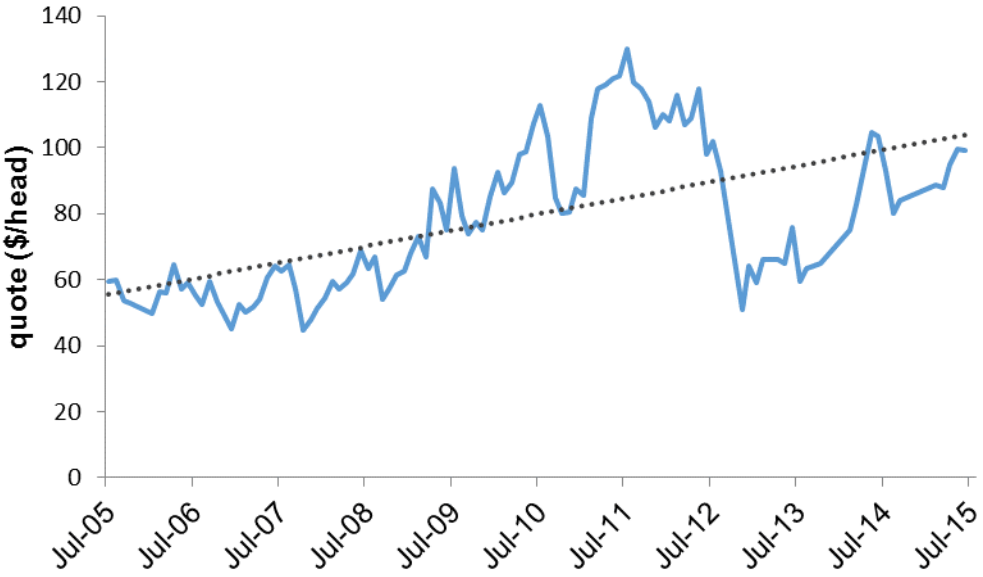


Figure 38. Price of wethers purchased for live export. (Source: MLA)

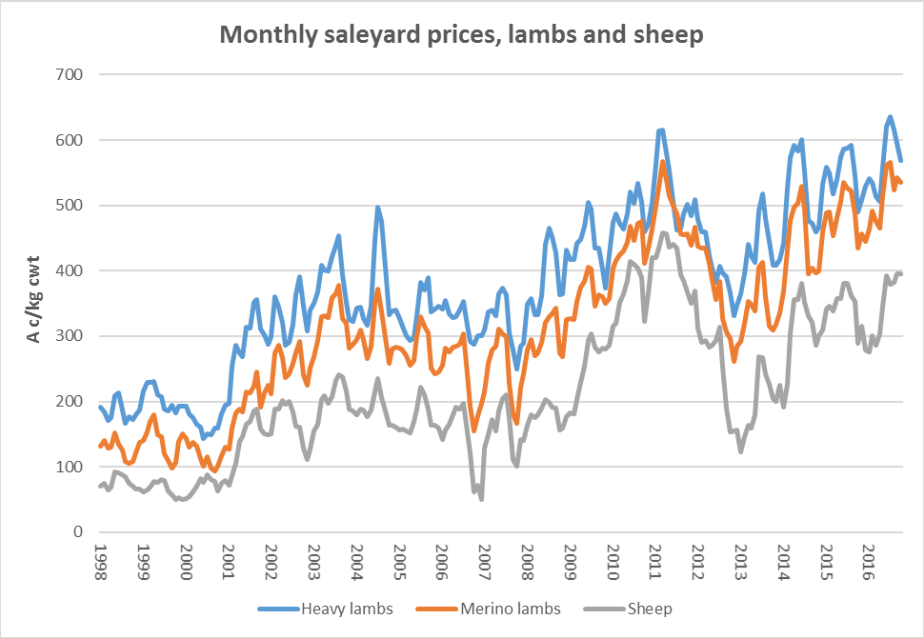


Figure 39. Prices for different classes of sale sheep. (Source: MLA)

The relatively high returns available from crop production also resulted in mixed enterprise farm businesses reducing their reliance on sheep production and increasing the acres devoted to grains, although the impact of this trend was somewhat muted for live exports, because of the complementarities of the two enterprises. The production of shipping wethers in the wheat-sheep zone of Western Australia is well suited to mixed farming and crop-dominant enterprises as they require less managerial labor than prime lambs. The benefits include lower finishing costs and a longer selling window. (Kingwell, 2011)

A third factor limiting the supply of live sheep for export has been the growth of the prime lamb industry in Australia. Prime lambs were traditionally the 'poor cousin' of the wool industry, but over the last two decades this has changed and in many regions which were previously dominated by merino sheep, the production of prime lambs is now more profitable. Prime lamb production has also benefited through improved productivity growth relative to merino production, as can be observed in Figure 33. There has been faster growth in the volume of lamb production relative to the numbers of lambs slaughtered, highlighting the genetic and nutritional advances that have been made in the industry.

Merino ewes are still used in the production systems to produce first-cross ewes as prime lamb mothers, but the proportion of merino wethers arising from these production systems is much reduced, and the effects of this change can be observed in the changes in the structure of the Australian sheep flock through time depicted in figure 35.

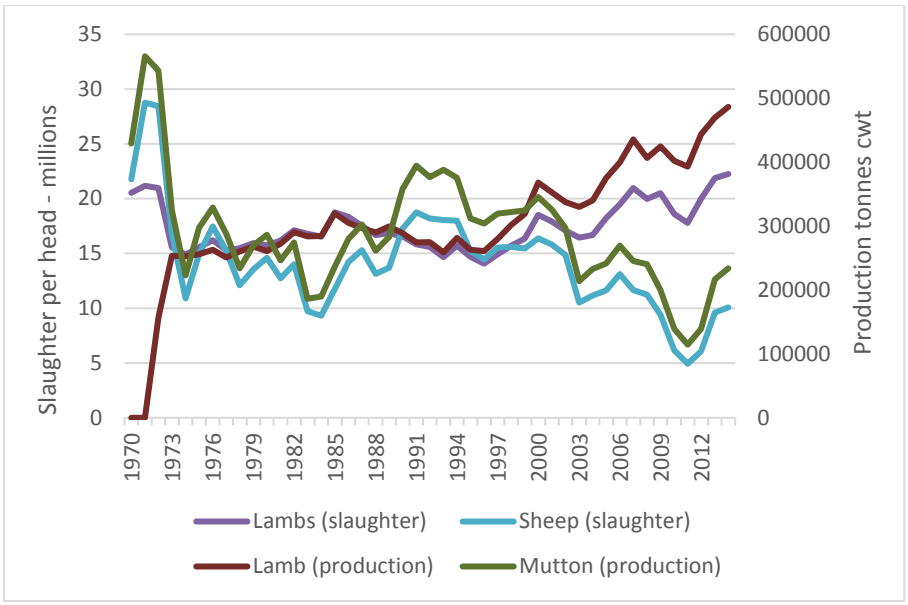


Figure 40: Australian sheep and lamb production and slaughter numbers (source: ABS/MLA)

The numbers of Australian live sheep exports have traditionally comprised less than 5% of the total flock, or approximately 15% of the annual sheep turnoff, although this proportion has declined since the early 2000s as the lamb industry has expanded.

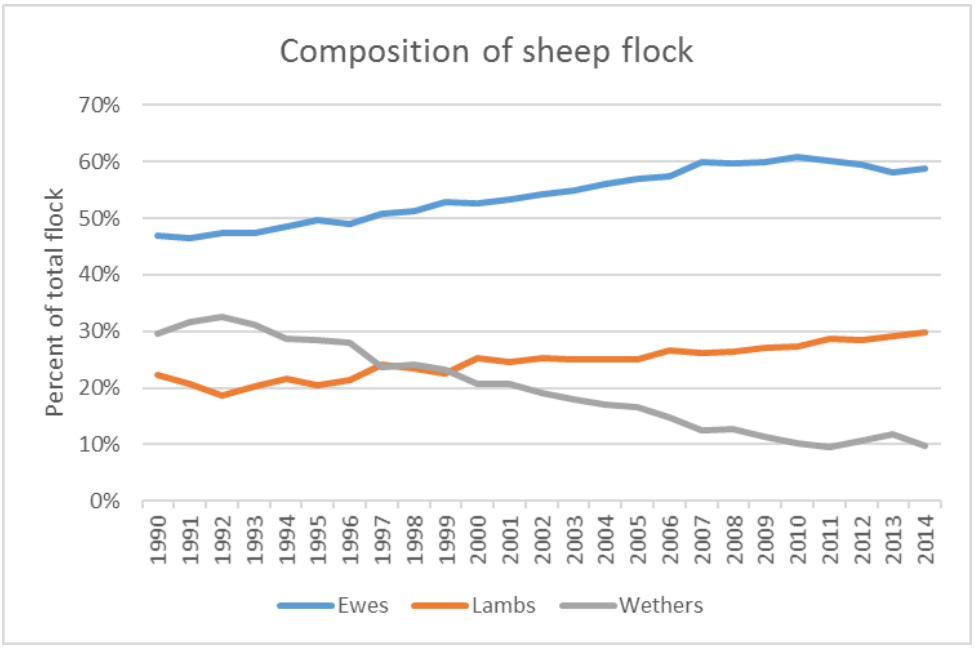


Figure 41. Composition of the Australian sheep flock. (Source: ABARES Agsurf database.)

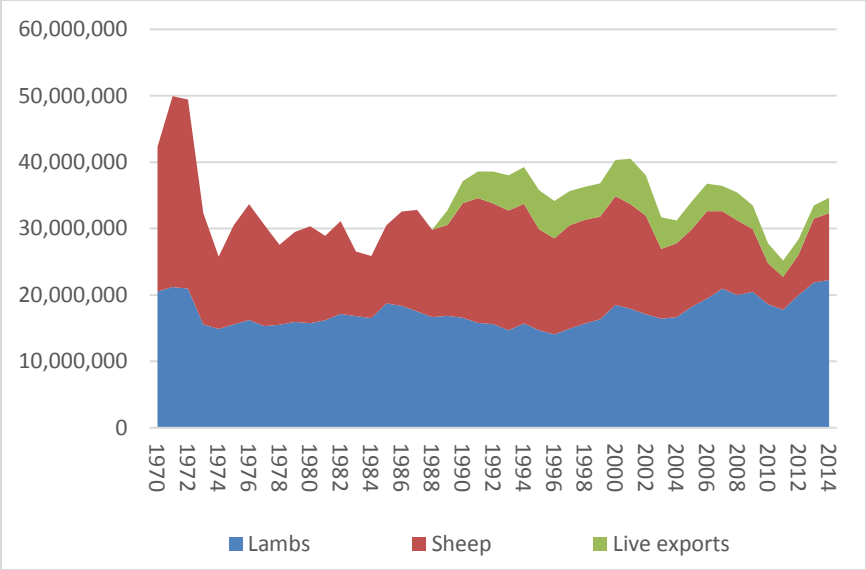


Figure 42: Australian annual sheep turn off (source: ABS/MLA)

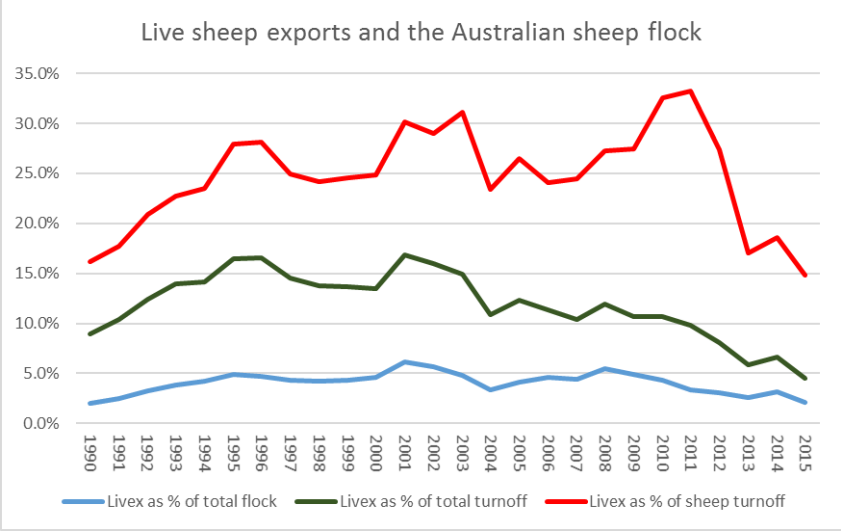


Figure 43. Live sheep exports and the Australian sheep flock. (Source: ABS/MLA)

The dominant source of live sheep exports has always been Western Australia, typically accounting for more than 80% of total exports. The second most important source of sheep for this trade is the south-east region of South Australia, and the nearby regions of Western Victoria. The geographical distribution of sheep farms supplying live sheep for export markets is shown in figure 39.

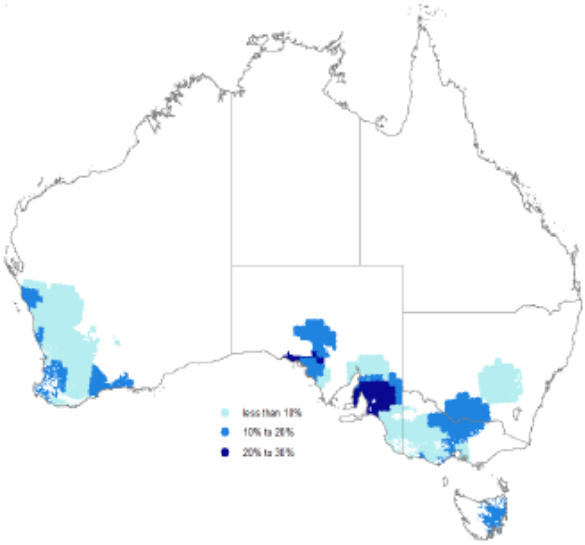


Figure 44 Proportion of total farm cash receipts from sale of sheep and lambs for live export, average for 2011–12 and 2012–13. (Source: ABARES Agsurf)

In each case, these are regions where cropping is the dominant farm enterprise, and where sheep are typically run as a secondary enterprise for grazing on stubble and fallow paddocks. The dry, Mediterranean climate in these regions and the lack of reliable improved pastures for sheep finishing makes them more suited to merino sheep production than prime lamb production, and the live sheep export market provides a flexible and well-suited market for merino wethers especially in drier years when adequate sheep feed may be in short supply. The live sheep market also provides reliable competition for the supply of merino wethers, ensuring prices remain competitive and are not totally reliant on processor demand for export mutton.

Goats

The goat industry in Australia has historically been quite small and fragmented relative to the major broadacre industries such as sheep and beef cattle, although domesticated goats have been present in Australia for as long as sheep and cattle have. The majority of the Australian goat population consists of feral or rangeland goats, which most recent estimates indicate range between 4 and 6 million head in number. (ABS, 2012). In addition, there are an estimated 500,000 domesticated goats in Australia, with the majority of these on farms in NSW and Queensland.

The annual turnoff from the goat industry has been growing significantly over the past decade, driven largely by export demand from Asia and the USA. Total annual goat slaughterings have increased from around 1.1 million in 2004 to 2.1 million in 2014, with an estimated 90% of these being rangeland goats, harvested from the drier inland areas of the continent. There has also been a reasonably constant demand for live goat exports, which have ranged from 50,000 to 100,000 annually over the past decade.

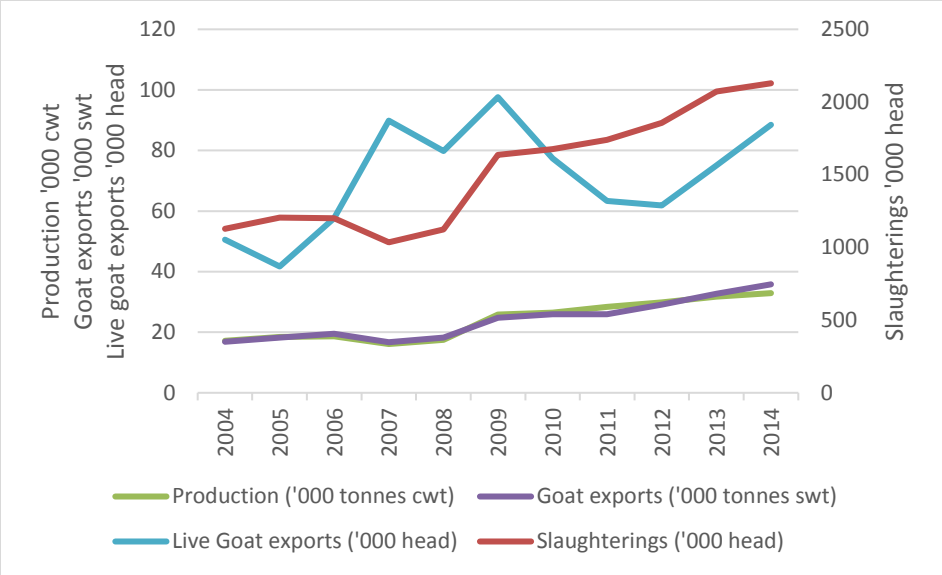


Figure 45: Australian Goat industry production, slaughter and export numbers. *(Source: ABS)*

The Australian rangelands goat has adapted well to the semi-arid to arid rangelands in the interior of Australia. A fibrous browser preferring shrubs to grasses, travelling widely to source it's nutritional and water requirements to reproduce and create a self-sustaining population. The dominant genetic base of the population has been cashmere goats, which are typically very light framed and hardy. With improved goat meat demand and higher prices, landholders have commenced infusing the heavier South African Boer goat genetics into the rangeland population to increase average carcass size. There is some evidence of this emerging in goat slaughter data, with the volume of goatmeat produced rising faster than the number of goats slaughtered, and displayed in the following figure.

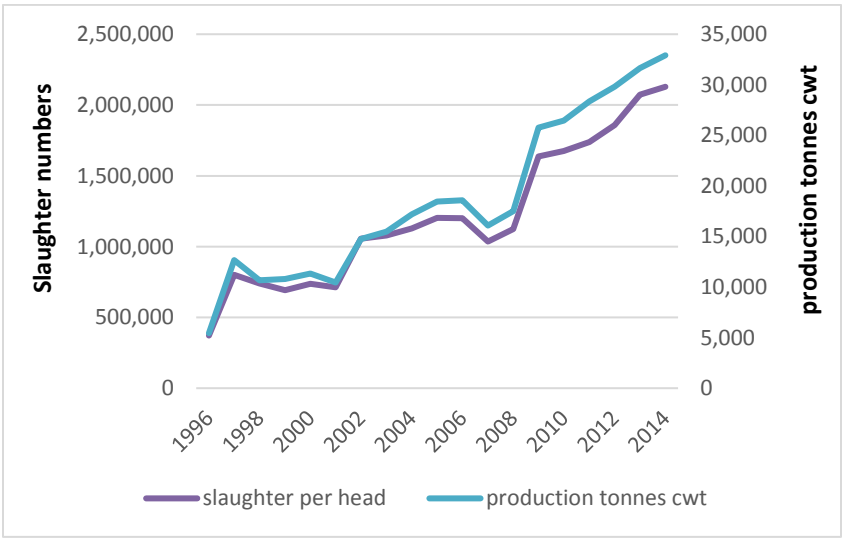


Figure 46: Australian goat slaughter and goatmeat production. (Source: ABS)

In previous decades, goats were regarded as feral pest in the rangelands, and were subject to intermittent harvest as the opportunity arose and prices were attractive. Over recent years the industry has been transitioned to a more professional footing, with some landholders investing in fencing and infrastructure to better manage and harvest goat populations. The ability to manage goat populations is particularly important for rangeland managers, as the long-term sustainability of rangelands depends on a landholder's ability to manage total grazing pressure – which includes sheep, cattle, kangaroos and goats.

The demand for live goat exports was originally for breeding purposes, however a limited but continuing market has developed for slaughter animals, with the main market since 2005/06 being Malaysia. This market was initially for for breeding stock which was primarily driven by a Malaysian government strategy which supplied goats to assist rural communities to farm in an attempt to eradicate poverty. Singapore is another key market, and its demand is largely attributed to religious values which influence meat consumption behavior.

Australia is a world leader in goat meat exports with around 95% of Australian goat meat exported, amounting to around 50% of the global goat meat trade (MLA, 2015).

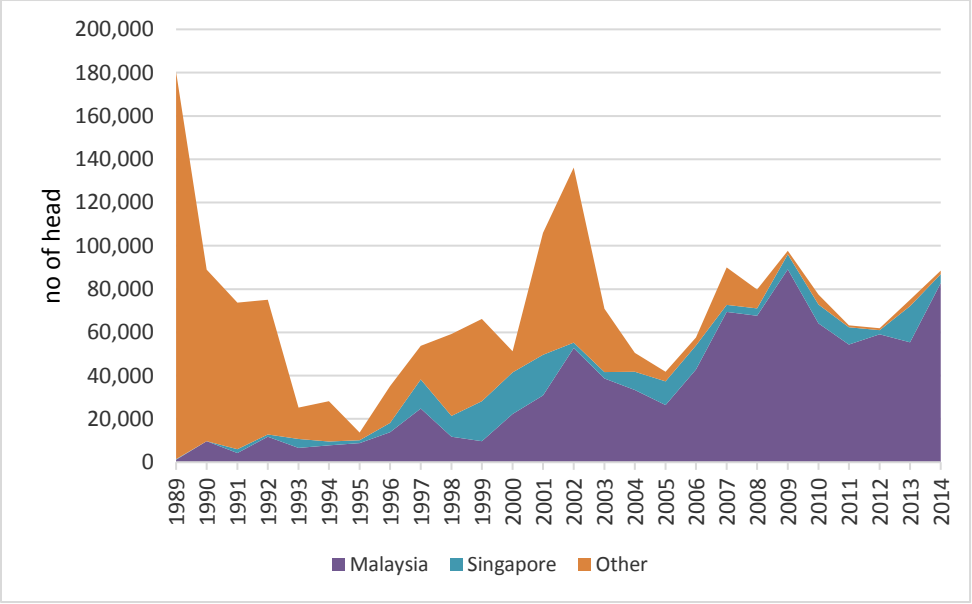


Figure 47: Australian live goat exports by destination (source: ABS/MLA)

Goat prices have generally been stable and followed a similar trend to that of sheep and lamb, although have been subject to a steep price increase over the past 2 years, as the growth in demand has grown rapidly.

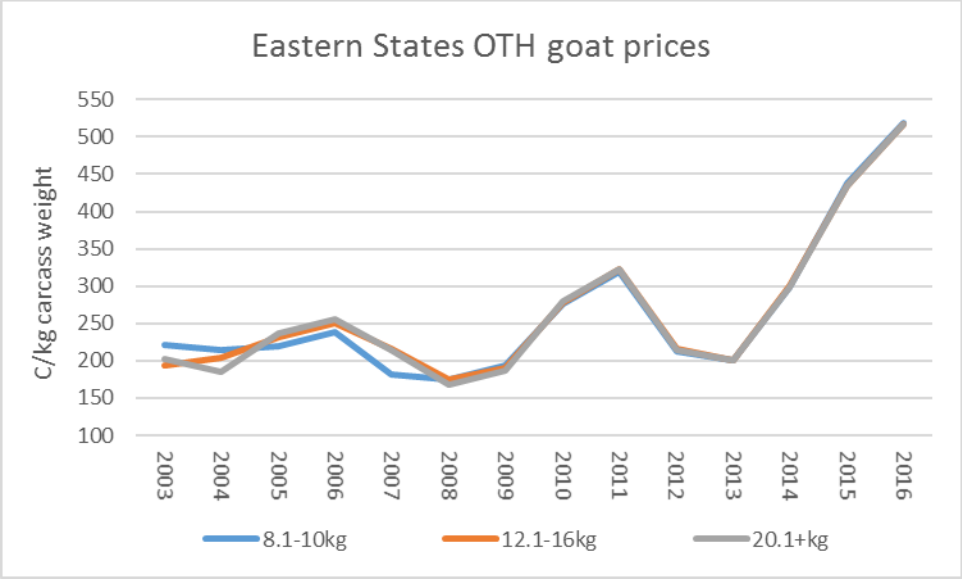


Figure 48: Eastern States over the hooks goat prices (source: ABS/MLA)

The development of the goat industry in Australia has provided multiple benefits for landholders, especially in the rangeland areas where the majority of either slaughter or live export goats are sourced from. The emergence of relatively high-value markets for livestock that were once considered a persistent pest has provided strong financial incentives for the management of the feral goat population, which also provides significant benefits associated with the improved ability to manage natural resources in rangeland regions. At the same time the industry has provided employment and new business opportunities in many communities that have experienced prolonged periods of economic decline.

The emergence of a market for feral goats has also provided benefits for other livestock sectors including the sheep and cattle industries, as improved grazing management capacity also enables those industries to operate on a more sustainable footing. While the market for live goat exports has remained limited, it also provides useful additional competitive pressure in markets in which only a few processors operate, and often only on a limited geographic basis.

6. The economic value of Australian livestock exports.

This section of the report reviews previous modelling of the economic significance of the livestock export industry in Australia, and also analyses factors considered to affect its economic significance.

Many previous modelling studies of the economic value of the Australian livestock export sector focus on comparisons of the value contributed by live exports relative to the value of the livestock sector under a simulated absence of live exports, the assumption being that a reduction in livestock exports would result in a roughly equivalent number of additional livestock undergoing slaughter and processing in Australia.

In economic terms, the livestock export industry is assumed to impose an opportunity cost, in the form of reduced throughput, employment and value added by the meat processing sector.

An analysis based entirely on opportunity cost is inherently flawed, as every economic endeavor in an economy invariably limits the resources available to alternative economic endeavors. As an example, the recent mining boom in Australia created unprecedented demand for labour in regional Australia, and in doing so imposed opportunity costs on many other sectors of the economy that rely on a regional labour force – including agriculture, meat processing and transport. Yet analyses of the economic benefit that the mining boom delivered to the Australian economy do not usually deduct an assumed opportunity cost imposed on other sectors of the economy from the net value added generated by the mining sector in analyzing its economic impact.

The more common approach taken to such analyses is an assumption that for a particular economic activity – such as livestock exports – to grow and remain competitive, it must be successfully delivering products to the market at a price that enables that economic activity to compete in the domestic economy for the resources and inputs that are required in order for that economic activity to occur.

The above qualification noted, the livestock export sector in Australia is loosely considered to represent one side of a set of binary options in the livestock supply chain, the other being domestic processing. This is an oversimplification in that the cessation of livestock exports may not necessarily result in the simple transfer of that number of livestock to the meat processing sector, especially given the geographical distribution of livestock production, the restraints imposed on livestock production in different regions by seasons and natural resources, and the geographical distribution of livestock processing facilities. In the absence of the livestock export market, livestock producers in a number of broad regions may be faced with a situation where the transport cost associated with moving livestock to a processing facility may render their livestock enterprise uneconomic, and force a switch to other alternative enterprises.

The recent emergence of alternative agricultural enterprises in areas of northern Australia currently devoted to cattle production (for example sandalwood plantations and carbon sequestration projects) provides an important caution against overly simplistic economic modelling assumptions.

In the medium to long term, competition from marginal cropping, horticulture, and other agricultural enterprises restricts meat processing sector throughput in much the same way as live export turnoff. In many cases, these alternative enterprises may have less opportunity to extract value from downstream processing post farm-gate than live exports let alone domestic processing. They are however more or less outside the supply chain and as such the wider economic impact of these alternatives in terms of beyond farm-gate value-added is less liable to be scrutinized.

That isn't to say the relationship between domestic processing and live exports should be ignored. Indeed, interaction between the two industries and the markets they serve form an integral part in forecasting the size of the live export industry. There is also emerging evidence of the 'market opening' role of livestock exports in emerging economy markets, whereby national meat markets evolve over time from livestock imports to higher-value added imported meat products.

This chapter will examine the outcome of previous economic modelling analyses examining the economic significance of the livestock export sector to Australian farmers and the broader Australian economy, paying particular attention to the underlying assumptions and future projections associated with each in order to gain a robust understanding of the economic significance of the sector.

Previous economic modelling of the live export industry

There have been a number of different economic studies conducted to determine the economic significance of the livestock export sector, or segments of it, to the Australian economy. A summary of some of the more recent analyses is provided below, followed by a more detailed discussion of some of the key assumptions employed in those analyses. Given the impact that prevailing livestock market conditions necessarily have on assumptions and outcomes, the economic studies are summarized in chronological order.

Live animal exports: a profile of the Australian industry.

Drum, F. and Gunning-Trant, C. 2008, Live Animal Exports: A Profile of the Australian Industry, ABARE research report 08.1 for the Australian Government Department of Agriculture, Fisheries and Forestry, Canberra, February 2008.

This report by (then) ABARE was commissioned by the Food and Agriculture Division of the Australian Government Department of Agriculture, Fisheries and Forestry to assess the size and value of the live export sector and analyse the factors influencing global trade and Australia's share of this trade over time.

The report initially detailed the emergence of the live cattle export industry in the 1980s, based on Australia's low-cost cattle production base, and the suitability of northern Australian cattle genetics and disease-freedom status for emerging south-east Asian markets. Prior to the emergence of these markets, the northern Australian cattle industry was based on a minimal-input management system, under which some cattle needed to be carried for up to five or six years to reach slaughter weight, and livestock quality was highly variable and generally poor, with subsequent very low unit returns.

The introduction of *Bos Indicus* genetics subsequent to the Brucellosis and Tuberculosis Eradication Campaign (BTEC) of the late 1970s, in combination with investments in fencing and water that were made possible as a consequence of improved livestock prices due to live exports resulted in increased carrying capacity and a growth in cattle numbers. Subsequent developments included the establishment of export depots and livestock transport and shipping capacity. The report noted that, as the northern export cattle industry developed, strong demand for live cattle resulted in prices for feeder and finished cattle increasing. As a consequence, the number of export accredited abattoirs in the region decreased as slaughter cattle were diverted away from the beef trade toward the live cattle export trade.

The report noted that Australia had been exporting live sheep for more than one hundred and fifty years, but that the trade had grown substantially with the opening up of a trade route to the Middle East (initially Iran) during the 1970s. This also coincided with growing export demand for lamb and mutton at a time when the profitability of wool production was declining. Key factors considered to contribute to rising export demand for Australian lamb and mutton included trade liberalisation by the United States, falling production in key lamb markets (particularly the United States and Europe), limited growth in exports from competitor countries such as New Zealand and rising demand in Asia as consumers looked for alternative meats in the wake of disease outbreaks affecting beef and poultry.

At the time the report was prepared, exports of live cattle accounted for around 7 per cent of total Australian cattle turnoff and 6 per cent of the total value of cattle production. In 2006-07, Australia exported 638,000 cattle valued at close to $437 million. At that time, more than 80% of all cattle exported live were sourced from northern Australia, and live cattle receipts represented between 10 and 25% of average total farm receipts of cattle farms in the region that were running in excess of 300 head.

In 2006-07, exports of live sheep accounted for around 11 per cent of total sheep turnoff and 15 per cent of the total value of sheep meat production. In 2006-07, Australia exported around 4.1 million sheep, valued at approximately $290 million, with more than 90% destined for Middle Eastern markets. More than 80% of the live sheep exported were shipped from Western Australia.

For Western Australian sheep farms running more than 300 sheep, the proportion of sheep sold for live export per property increased from 22 per cent in 2003-04 to 40 per cent in 2005-06. In 2005-06, the average number of animals sent to the live export market rose to 691 per property, an increase of 28 per cent over the previous five-year average. Despite this, live sheep receipts

were only 3-7% of total farm receipts, although the report noted that the major source of farm income for these farms was from grain production.

The research report provided a detailed analysis of the trade factors creating the growth in demand for livestock exports from Australia. These included religious and cultural factors, as well as logistics and cold chain limitations in many key markets that dictated a preference for live animals rather than processed meat.

In assessing future prospects for livestock exports, the researchers noted that a combination of transport and infrastructure logistics in importing countries, together with a range of cultural and religious practices, mean that there was a strong preference for live animals rather than chilled or frozen meat. Any restrictions on this trade from Australia were therefore expected to have an adverse impact on the industry as the importing countries would source livestock from competing markets rather than substantially altering their demand for beef, veal or sheep meat.

The report concluded with an assessment of the likely implications of a cessation of live animal exports from Australia. The researchers projected that if Australia were to cease ship live cattle and sheep exports to south east Asia and to the Middle East, there was likely to be a significant effect on some of the regional economies of Western Australia and the Northern Territory, although the magnitude of the potential economic losses was not estimated. What was known was that these market losses would stem from the substitution of demand of current export markets to alternative sources of supply. That is, countries that imported live sheep and cattle from Australia would be unlikely to substitute their demand for live animals to beef, veal or sheep meat. Rather, the authors concluded they would likely to source the animals from elsewhere.

The value of live sheep exports from Western Australia: A review of adjustments that would be required if live sheep exports from WA ceased.

ACIL Tasman (2009). The value of live sheep exports from Western Australia: A review of adjustments that would be required in live exports ceased. A report prepared for the RSPCA, March 2009

This report was prepared for the RSPCA, which was (and continues) campaigning for the cessation of livestock exports from Australia. The objective of the research was to estimate the likely adjustment cost for Western Australian farmers if live exports of sheep were stopped, rather than to estimate the economic value of the trade, although there is obviously an inverse relationship between the two. The authors note the research was conducted at a time when climate and market conditions were relatively adverse for Western Australian sheep producers.

The adjustment process in the event of a cessation of the trade was modelled for three different flock structures typically run in WA:

- A merino flock where a proportion of the wethers are retained for wool production for 5 years.
- A merino flock where all wethers are sold before they reach 2-3 years old.
- A merino ewe flock where a mix of merino and first-cross lambs are produced.

The researchers found that while the live export market accounted for approximately 42% of sheep disposals from WA farms, revenue from live export sales was just one of a wide range of outputs of a merino flock on an average WA farm and equated to 3-7% of total farm receipts for farms with more than 300 sheep. Based on the case study analysis, the researchers concluded;

- The adjustment costs would be about 3- 7% of the investment value of a ewe or wether, where increasing merino and cross bred prime lamb production was possible.
- Where switching to selling merino wethers earlier for slaughter or switching to prime lamb production was not available, the cost could be as high as 13% of the value of a wether. However, this was likely to be the situation for only a small proportion of the total farming population in WA.
- For mixed farming systems, which account for the majority of WA farm businesses, the loss of the option to sell live export sheep was not likely to create a significant incentive to replace large areas of pasture with crop because other drivers of land use change were already providing this incentive, e.g. below average rainfall, declining wool prices, and higher productivity gains in cropping.

The researchers concluded that in aggregate, the adjustment cost associated with the cessation of the live sheep trade at that time would have been $200 million, and also proposed that these costs could be moderated through the implementation of a gradual phase-out managed through a transferrable quota system. In reaching this conclusion, the research also identified that the value of the trade to WA farmers was at least $74 million per annum, and that full adjustment would take up to four years.

The report noted that a cessation of Australian live sheep exports would result in a substitution in demand for live sheep to other exporting nations including in the Middle East, North Africa and Eastern Europe, but projected that up to a quarter of the current demand may be transferred to frozen or chilled sheepmeat exports from Western Australia. The basis for this projection was not reported.

Notably, the above projected results were calculated based on the assumption that sheep prices would not change as a consequence of the additional supply of sheep that would be sold to domestic sheepmeats processors, and subsequently made available for sale on domestic or export sheepmeat markets. This assumption is contrary to any normal economic modelling assumptions, and also to observed market responses when additional numbers of livestock are placed on the market.

Incorporating an assumed sheep price reduction, as would inevitably be the case, would have increased the projected cost of closure of the trade. Similarly, the analysis did not assume any costs would be associated with operation of the proposed quota system associated with the phase out of live sheep exports.

Rather than demonstrate that there would be minimal impact on Western Australian sheep farmers if the live export trade was halted, this report actually served to reinforce the substantial economic impact that such a decision would have, and more realistic assumptions would have identified an even greater impact.

Of interest in relation to this report was that it noted that the specific animal welfare concerns underpinning the call for Australian live sheep exports to be stopped were the treatment of sheep at destination, rather than their treatment in Australia or during shipment.

Given the conclusion of the research was that the market response to an Australian ban would largely be to import sheep from other locations, there was no discussion about how an Australian ban on live sheep exports would actually result in a net improvement in the welfare of live sheep exported to these markets.

The Future of the Queensland Beef Industry and the Impact of Live Cattle Exports

A report prepared by SG Heilbron Economic & Policy Consulting for for Teys Bros, Swift Australia and Nippon Meat Packers Australia. June 2010

Three leading beef processors in Australia who have major operations in Queensland commissioned research to:

- identify the economic cost to Queensland when cattle are exported rather than processed into beef (in particular impacts on employment and incomes)
- assess the likely impacts on the Queensland beef industry and associated communities if cattle exports continue at current levels or grow
- identify inequities that exist between the sectors.

The research involved collecting data on the performance of the three major Queensland beef processors, and then extrapolating that to the entire Queensland beef processing sector. That information was then used to calculate the gross economic output and employment generated by the sector in Queensland. Overall the beef processing industry in 2008-09 was estimated to generate $4.646 billion in value added (gross state product) and 35,679 FTE employment, including flow-on effects in other sectors such as retail, trade, property and business services, health and community services and transport. ABS input/output tables were utilized to estimate flow-on effects in other industry sectors.

The researchers used these figures to estimate the outcome if the 176,000 cattle exported live from Queensland had instead all been processed in Queensland, which would increase processing throughput by 5%. Under that scenario, there would have been an estimated increase in FTE employment of 1,213 jobs and an additional $139 million in Gross State Product.

Projecting further, the researchers concluded that if Queensland live cattle exports reached 379,000 head by 2013, the economic cost to Queensland would be $260 million in State GSP and 2,180 jobs lost.

The key conclusions of the study were that;

- There is a significant opportunity cost to the State of Queensland from live cattle exports.
- The key driver of live exports is not competitive market forces, but rather subsidisation and trade protectionism. For example, imports of certain cuts are banned outright by

Indonesia – cuts which are critical to Australian exporters and protect Indonesian processors, feedlotters and livestock importers.

- The subsidies for feedlotting and processing in Indonesia allied with subsidies for the live trade, and higher government influenced costs and charges for processing in Australia as well as barriers against Australian beef exports generate economic rents for beef processed in Indonesia, some of which are passed back along the value chain in the form of incentives for livestock producers in Australia to supply the live trade

There are a number of well-recognised limitations to the approach adopted in this research. Firstly, the method used to estimate the economic impact of live cattle exports was a static model, without the second and later order impact analysis associated with computable general economic (CGE) modelling. It assumes that there is no alternative employment available (either at equivalent or lower wages) and no other opportunities for the transport and other services involved. This does not reflect reality, with the recent Queensland mining boom being a case in point where labour demand was extremely high, as was related demand for a whole range of goods and services in the Queensland economy. During that period, loss of meat processing employment would not have had any negative economic impact.

The analysis also ignores any costs imposed on the livestock production sector as a consequence of having to retain stock for longer, and to accept lower livestock returns and reduced production flexibility in the absence of the live cattle export market. Many cattle producers would face higher transport costs in moving their stock to processing centres. As such, the estimates developed at best represent short-term gross impacts, rather than net impacts on the economy of live cattle exports. There would also be a range of longer-term costs including the depreciation of regional land values and lower rates of productivity growth in live export-dependent regions that were not included in the analysis.

The analysis also makes the assumption that the addition of an associated volume of processed product to export beef markets will have no negative impact on export prices, and hence livestock prices. This assumption is contrary to normal market responses observed over many years in the sector.

The analysis also acknowledged, but ignored the cost associated with a reduction in economic activity that would arise for live export service providers such as ports and shipping services in the absence of live cattle exports.

Finally, the report listed a number of policy inequities that were identified as disadvantaging meat processing relative to live exports. These included discriminatory trade restrictions in importing nations, and subsidized services and infrastructure provided for the live export industry in Australia.

On the former, these are the responsibility of importing nations governments, and reducing these is the focus of ongoing efforts by the Australian Government and industry, but they are also a fact of life in relation to international trade. It could equally be argued by overseas meat processors that the difficulties they face in exporting fresh meat to Australia are simply a subsidy in disguise to support Australian meat processors.

On the latter, it is difficult to understand an argument to the effect that investment in better transport infrastructure throughout Queensland somehow differentially favours live cattle exports more than beef processors. As noted earlier, a cessation of live exports would mean Queensland cattle producers would need to utilise additional transport services to move cattle to processing centres, inferring that investment in Queensland transport infrastructure is actually a subsidy that favours the meat processing sector.

In conclusion, the above analysis relies on assumptions that are unrealistic and unbalanced, and which clearly would not be realised in the event that the live export of cattle from Queensland was halted.

The contribution of the Australian live export industry.

The Centre for International Economics (2011). "The Contribution of the Australian Live Export Industry." Report prepared for Meat and Livestock Australia and Livecorp.

Unsurprisingly, there was a number of studies commissioned on the economic contribution of the Australian livestock export industries in 2011, coinciding with the decision by the Australian Government to suspend live cattle exports in response to a television program showing images of cruel treatment of Australian livestock in export destinations.

Prominent among these research pieces was economic modelling and analysis conducted by the Centre for International Economics (CIE) for Meat and Livestock Australia and Livecorp. The CIE was engaged to provide an independent and comprehensive assessment of the value of the live export industry. Specifically, to estimate the contribution of the live export industry, the study assessed the potential impact of closing the live export trade on prices and production across the entire livestock industry.

This ‘impact’ was defined as the differential between farm gate returns and incomes in the live export and processing industries with and without the live trade. The differential was estimated for the period 2005-06 to 2008-09, however, the report does not attempt to directly estimate the impact on the wider Australian economy in terms of jobs and gross domestic product.

The researchers noted that, over the period 2005-07 to 2008-09, the average annual value of live exports was around $1 billion in free on board (FOB) terms, although not all this revenue flowed back to exporters and livestock producers because of the costs involved in the acquisition, preparation and transport of these animals.

The researchers conducted further analysis and identified that the share of this total revenue captured at farm-gate was approximately 74%, as is summarized in the following table.

Table 1. Estimate of Farm level value of live exports.

	Export value	*Farm gate value*	*Contribution of farm gate to exports*
	$m	$m	%
Cattle	589	465	79
Sheep	312	216	69
Dairy heifers	89	58	65
Goats	10	4	40
Total	1000	742	74

[a] Average annual contribution over the period 2005-06 to 2008-09.

Source: ABS and CIE estimates.

The researchers explained, however, that the estimates provided in the above table do not fully reflect the total impact of live exports, because they do not account for the flow-on effects to the wider livestock industry. Without live exports, farm gate returns would be lower because of the lower demand for livestock and the higher transport costs involved in transporting animals to alternative markets. Estimating this total impact requires assessing the 'next' best return for livestock, in absence of the live exports: this would be sales to the processing sector and then onto domestic and export meat markets. The difference; between the actual gross value of production (GVP) and value added actually observed over the period, and an estimate of what would have prevailed 'without' the live export sector gives an estimate of the red meat industry benefit provided by the live export sector. Using the comprehensive Global Meat Industries (GMI) model, the projected impact of the differences estimated to arise in livestock prices Australia-wide were calculated, and are displayed in the following table.

Table 2 Impact of the absence of the live trade on farm gate returns for red meat industry prices [a]

		2006	*2007*	*2008*	*2009*	*Average*
Percentage change	%					
Grass fed cattle		-3.5	-3.9	-4.1	-4.5	-4.0
Grain fed cattle		-1.6	-1.3	-1.2	-1.1	-1.3
Lamb		-8.4	-7.2	-8.3	-6.5	-7.6
Mutton		-19.2	-18.7	-21.5	-11.0	-17.6
Live weight prices	Ac per kg					
Grass fed cattle		-6.3	-7.4	-8.1	-9.4	-7.8
Grain fed cattle		-6.3	-7.4	-8.1	-9.4	-3.2
Lamb		-12.4	-10.2	-14.9	-11.4	-12.2
Mutton		-16.2	-14.8	-18.9	-8.5	-14.6

[a] Change from the observed case in saleyard terms.

Source: GMI model and CIE calculations.

These were Australia-wide aggregate estimates, with the differences estimated to be much greater within specific geographical regions.

On the basis of the modelling, processed beef production was estimated to have been 5.1 per cent or 109 kilotonnes of carcase weight equivalent (kt cwe) higher in the absence of the live trade; and sheepmeat was estimated to have been 100 kt cwe or 14.6 per cent higher without the trade.

The modelling projected that the majority of this additional product would have been diverted to the price sensitive export markets although domestic consumption of lamb would also have increased marginally. For beef, these markets include the United States, Japan and Korea. For lamb and mutton, the United States and the 'other countries' grouping, including those in the Middle East, would have taken the additional product. It is important to note that the 'without' live trade scenario did not result in an automatic transfer over of current meat consumption in destination markets to boxed product directly imported from Australian processors.

Based on the modelling, without the trade, gross value of production (GVP) each year would have been $128 million or 1.5 per cent lower for beef producers; and $119 million or 6.0 per cent lower for sheep producers. There would also be a loss of $71 million for exporters. This was offset by a $108 million gain to processors resulting in a net loss of $209 million in gross value for the entire sector, as shown in Table 3.

Taking into account a number of other factors including dairy heifer and goat exports and changes in net processor output, the analysis showed that the contribution of the live export industry to the red meat industry was significant — both to those producers oriented to live export markets and those to processing markets.

Table 3. Impact of a cessation of livestock export trade on cattle and sheep industries.

		Gross value of production			*Value added*		
		Cattle	Sheep	Total	Cattle	Sheep	Total
Farm sector	$m	-128	-119	-247	-47	-64	-110
Exporters	$m	-40	-30	-71	-8	-6	-14
Processors	$m	70	38	108	18	8	25
Total	$m	-98	-111	-209	-37	-62	-99
Percentage contribution							
Farm sector	%	52	48	100	42	58	100
Red meat chain	%	57	43	100	57	43	100

[a] Average impact over the period 2005-06 to 2008-09. Value added is equivalent to farm income and net margins for exporters and processors, that, is total output less input and hired labour costs.

Source: GMI model and CIE calculations.

At a regional level, the modelling projected that for live export regions (ie those regions which have a high dependence on live exports), the GVP of beef producers could fall on average by 21 per cent while sheepmeat producers value of production could fall by 42 per cent. The researchers also noted that the impact of these price effects would be sustained due to the lack of viable short-term alternative enterprises at farm level.

The researchers noted that a range of less tangible benefits associated with the livestock export trade were not included in the modelling. These included;

- productivity improvements —where access to the live export industry has supported a range of changes resulting in strong productivity growth across the broader northern beef industry.
- increases in land values in both northern and southern beef properties —where the live export industry has bolstered expected future returns, it is likely to have been a contributing factor to significant investments in land acquisition.
- a range of other regional economic benefits —where a net increase across the value of livestock has supported an increase in net farm returns, and broadened the economic base of farms. This includes the benefits to indigenous cattle producers, especially in remote areas, where income and employment opportunities will continue to be reliant on live exports.

A limitation of this research is that it did not examine some of the flow-on or multiplier effects of a cessation of the trade. These would arise both in regions negatively impacted by the cessation of the trade (a negative impact), and in regions positively impacted by the resultant increase in meat processor throughput (a positive economic impact).

The economic importance to Western Australia of live animal exports. (2011)

A report for the Western Australian Agricultural Authority by Ross Kingwell, Peter Cunningham, Tanmoy Nath, Lucy Anderton, Vilaphonh Xayavong, Kimbal Curtis, Richard Norris, Graham Annan, David Warburton and David Feldman (2011). DAFWA. Government of Western Australia.

This research involved an examination of the likely impacts of a cessation of live animal exports from Western Australia on the livestock industries and broader Western Australian economy through a detailed whole of supply chain analysis at a regional level. The issue was of particular significance to Western Australia, given that at the time Western Australia supplied 2.5 million live sheep or 75% of total Australian live sheep exports, and 300,000 or 40% of Australian live cattle exports annually. At the time, Western Australia was also supplying approximately 15,000 live goats, or around 15% of national exports.

The researchers estimated that live sheep exports from WA generated income in the range of $175 million to $275 million annually. Sheep production occurred mostly in the higher rainfall southern parts of the WA agricultural region. The principal markets for these sheep were Middle Eastern countries: Saudi Arabia, Kuwait, Bahrain, Qatar, Jordon and Oman.

The report noted that in 2009/10, about 390,000 cattle were exported from WA ports, and based on a CIF value of $846 per head, the total worth of live exports was $330 million in 2009/10. Live cattle exports from the Kimberley region were worth around $120 million and made up 45% of the live cattle exports from WA. Exports from the Pilbara region were relatively small at 6%, with a value of $15 million. Exports from Geraldton were valued at $27 million; noting this port drew on a number of regions, but mainly from the Gascoyne and the Midwest. Fremantle,

with 39% of the exports valued at $106 million, drew on several regions including portions of the southern rangelands as well as the agricultural region.

The projected impacts on WA businesses of a termination or phased reduction in the live animal trade depended on the rate of reduction, the importance of the live trade to the particular business and the importance of the trade to the region in which the business operates. The report quantified the sheep, beef and goat supply chains in WA and discussed which parts of these supply chains and regions were vulnerable to a loss of the live export trade.

Depending on the location and nature of the farm or pastoral business, the reductions in business profits were projected to range from minor to substantial. At the industry level, pastoral beef production was the most vulnerable. The sheep industry was also projected to face revenue reductions, mostly for farmers greatly reliant on profits from sheep production and who are locked into sheep production. However, many other farmers who engage in mixed-enterprise farming that includes sheep or cattle production were projected to be able to transition to alternative enterprises and either lessen their losses or potentially gain, given current margins for some crops.

Various types of analyses presented in this report indicate that reductions in live exports of sheep or cattle would lessen farmers and pastoralists incomes, principally through reduced prices they received, and in the case of northern region pastoralists, greater transport costs. Meat processors were projected to be beneficiaries in the near and medium term, but not necessarily in the long term if flock and herd sizes diminish as resources were switched into alternative land uses.

For the cattle industry, various scenarios associated with different periods of trade cessation were projected to reduce farm level value-added by up to $94 million per year, to increase processor value-added by up to $20 million per year, and to reduce exporter/retailer value added by up to $65 million per year. For the sheep industry, the analysis showed farm-level gross margin losses of up to $90 per hectare (from the then current level of around $310 per hectare) in the absence of the trade.

The report concluded that the economy-wide aggregate impacts associated with a cessation of the live trade are relatively minor (in percentage terms), however the regional economy effects in particular regions, such as the northern beef region, would be large.

Live export trade assessment (2014).

Research by the Australian Bureau of Agricultural and Resource Economics and Sciences prepared for the Live Animal Exports Reform taskforce, Department of Agriculture, July 2014

This research was conducted to assess Australia's livestock export trade, against a background of changing market and policy setting both in Australia and in key export markets. It presented information on domestic and international factors that drive the export of livestock for feeder or slaughter purposes and assessed the benefits to producers and the economy in export returns, farm incomes and employment.

The report noted that, at the time it was prepared, Australia typically exported between 500,000 and one million head of cattle for feeder or slaughter purposes each year, which generally accounted for between 6 and 10 per cent of annual cattle turn-off. Most were exported to South-East Asia, particularly Indonesia. Around two to three million head of sheep were also exported each year, predominantly to the Middle East, accounting for around 6% of total annual sheep turnoff. Australia also typically exported between 60,000 and 80,000 live goats, representing around 3 to 4 per cent of goat turn-off. Most were destined for Malaysia. Subsequent to this report being prepared, there has been significant growth in Australian live cattle exports.

The main focus of this research was to document the value of the live export trade to the economy, and to consider likely future developments. It noted that, in addition to the direct value generated through livestock sales, the livestock export industries generate significant additional economic activity in service industries associated with the trade. The researchers estimated that the livestock export industries—including in ancillary industries such as transport, veterinary and feedlot services—generate employment for between 8,000 and 10,000 people, split almost evenly between those directly employed by businesses involved in the trade, and indirect employment associated with businesses servicing the trade. The live cattle export trade also provides employment opportunities for Indigenous people in the northern Australian live export region. Employment estimates are summarised in the following table.

Table 4. Estimated employment generated by livestock export industries. (FTEs)

	Region	Direct FTEs	Indirect FTEs	Total FTEs
Cattle	Northern Western Australia	775	270	1,045
Cattle	Southern Western Australia	825	847	1,672
Cattle	Northern Territory	1,048	773	1,821
Cattle	Queensland	534	679	1,213
Sheep	Southern Western Australia	2,025	2,078	4,103
Total	All regions listed above	**5,207**	**4,647**	**9,854**

(Source: ABARES, 2014)

In reviewing the historical developments that have occurred in the industry, the researchers noted that Australia's live animal export trade has transformed over the past two to three decades. Initially the trade provided opportunistic income for livestock producers, such as from the export of sheep that were beyond their wool-producing prime. This has evolved to a specialised industry producing animals that specifically match the specification of importing countries. This is perhaps most evident in the development of the feeder cattle trade from northern Australia. Breeding and management systems were developed to specifically produce young cattle for South-East Asian feedlot sectors, firstly in the Philippines and subsequently in Indonesia.

The researchers provided a close analysis of factors likely to impact on livestock exports in the future, including developments in key live export markets. Factors analysed included changes in destination markets, transport and shipping infrastructure, the development of beef processing facilities in northern Australia, trade access and animal welfare concerns.

The report notes that South-East Asia is the major destination market for Australian live cattle and goat exports. Factors driving demand for livestock imports include growing wealth resulting in increased demand for protein, but constrained domestic livestock production sectors. In these markets there are a range of religious, cultural and logistical factor that favour livestock imports over chilled or frozen imports, and the development of domestic feedlots for cattle fattening are also favoured due to the agricultural and employment opportunities created.

Australia is the dominant supplier of cattle to these markets, although faces competition from Thailand and a number of other South-East Asian nations that now supply about 20% of the market. Major exporters such as Brazil and India are excluded from the Indonesian market at present due to disease status, but represent a future threat given their low-cost production systems.

The other major source of competition is from rising meat imports, predominantly chicken, however the report notes that as urbanization increases and cold chain logistics develop, urban populations in particular are purchasing more imported meat.

The Middle East is Australia's largest market for live sheep, although the market-share once held by Australian imports has considerable diminished. Religious and cultural preferences, especially for Halal slaughter, were noted as the principal drivers of demand for live sheep imports in this region. In contrast to South East Asia, lack of refrigeration is not a significant problem in the Middle East therefore not a significant driver of live sheep demand.

The major competition Australia faces in the Middle East are live sheep imports from African and European nations. The implementation of the Exporter Supply Chain Assurance System (ESCAS) in 2012 was noted as a factor that has resulted in loss of market-share for Australian live sheep exports, especially given that a major importer such as Saudi Arabia has not developed ESCAS compliant facilities and has ceased importing Australian sheep, transferring that demand to African nations. Australia supplies few live cattle to the Middle East with Brazil and Somalia the dominant suppliers of that market. Competition is also reported to be growing from meat imports (including from Australia) as incomes increase and western-style supermarkets expand.

Transport and shipping infrastructure, both in northern Australia and in destination markets, were considered to be major impediments limiting the live export trade. The development of beef processing facilities in northern Australia was also considered a factor in future markets, although in the absence of irrigation and cattle fattening facilities, was considered likely to complement rather than compete with live exports. This is because these processors will provide a market for unproductive cows, and the early removal of these from northern herds will help to increase weaning percentages and overall industry productivity. Market access and animal welfare standards in destination markets were also identified as major potential obstacles to the

future growth of the trade, although it was noted that market access is rapidly improving due to trade agreements, and the ESCAS system and associated in-country training provided by Australia has had a very positive impact on animal welfare standards in relevant markets.

Contribution of live exports to the Australian wool industry. (2014)

The Centre for International Economics (2014). "The Contribution of the Australian Live Exports to the Australian Wool Industry." Report prepared for Australian Wool Innovations.

This research arose from a request by Australian Wool Innovations (AWi) to the CIE to evaluate the impact of live sheep exports on the Australian wool industry. Subsequent research then evaluated the impact of the closure of live sheep exports on woolgrowers in Western Australia and in specific regions of the eastern states. The impact on woolgrowers was calculated by comparing the market outcomes observed in 2011-12, such as production and prices, with what they would have otherwise been with the closure of live exports.

The methodology employed was similar to the July 2011 report referred to earlier. Using a global meat model, 2011-12 industry outcomes were adjusted to what would have been the case had live sheep exports not been available as a market option for woolgrowers. The modelling used a medium-term framework of 3-5 years, recognizing that this is the timeframe in which farm operators are able to make longer-term adjustments to stock numbers and enterprise mix.

A summary of the main results arising from the analysis is shown in Table 5. They indicate that if the live trade were to close, average saleyard prices across Australia would fall by:

- $4.07 per head or 4.5 per cent for lambs
- $13.20 per head or 24.4 per cent for older sheep.

That is, prices would have been between $4 and $13 per head lower than those observed in 2011-12 across all Australian regions — as a result of closing live exports.

In addition to lower sheep prices, the researchers reported that closure of live sheep exports would be expected to impact on the wool industry in the following ways:

- the national sheep flock would fall by between 3.5 per cent relative to 2011-12 levels representing 2 million head
- the national wool clip would fall in line with the national flock by 2.3 per cent or 7.9 million kilograms greasy basis
- the eastern (and western market indicator) would increase by 1.49 per cent or 17.9 cents per kilogram clean basis as a result of lower wool production Australia-wide.
- These impacts combine to reduce the gross value of production of woolgrowers by 1.55 per cent or $39 million per annum.

The researchers noted that in comparison to other shocks such as a significant exchange rate adjustment, these impacts are relatively modest.

Table 5. National impacts of the closure of the live sheep export trade.

Factor	Unit	Projected change
Lamb saleyard prices	%	-4.5
	$ per head	-4.07
	c/kg dw	-19.1
Sheep saleyard prices	%	-24.4
	$/head	-13.2
	c/kg dw	-62.6
National sheep flock	%	-3.5
	million	-2.05
National wool clip	%	-2.32
	m kg greasy	-7.9
Gross value of wool production	%	-1.55
	$ millions	-39
Wool price (Eastern Market Indicator)	%	1.49
	c/kg clean	17.9

The impact of the trade closure on the sheep industry of Western Australia was projected to be much more significant than the national figures would suggest. This is understandable, given that Western Australia often supplies 80% or more of the total sheep exported. The projected impacts on Western Australian woolgrowers were;

- $32 per head for lambs or a fall in the saleyard price of 35.1 per cent
- $36 per head for sheep or a fall in the saleyard price of 66.2 per cent.

Overall, the researchers projected that without the live trade' the gross value of production of WA woolgrowers would be $302 million or 6.5 per cent lower each year compared to 2012.

For woolgrowers in the eastern states, the impacts were estimated to be much less significant, although there are regions where the market for older sheep is dominated by live exports. For the three eastern states regions which are most dependent on the live export market for older sheep, Table 6 displays the projected impacts of a closure of the trade, and the impact this would have on individual farm receipts.

Table 6 Impact of closing the live export trade on farm gate prices and total receipts

Region	Change in mutton price		Change in total receipts	
	$/head	%	$/farm	%
South Australia				
North Pastoral	-7.6	-12.7	-18,400	-3.5
Eyre Peninsula	-7.6	-12.2	-7,700	-3.6
Murraylands/Yorke Peninsula	-6.6	-10.0	-6,800	-4.3
South East	-5.6	-7.9	-10,600	-1.9
Victoria				
Central North	-5.6	-7.5	-2,900	-2.1
Wimmera	-5.6	-7.7	-2,400	-1.8
New South Wales				
Far West	-6.0	-9.6	-7,500	-3.3
Riverina	-5.6	-7.5	-4,000	-2.0

In conclusion, the researchers noted that the implementation of ESCAS from October 2011 had already eroded much of the benefits that the live export trade brought to the wool industry.

Key assumptions in economic analyses.

As is evident from the previous review of past economic studies, there are a number of key assumptions, that validity of which has an important effect on the outcome of any economic analysis of the livestock export industry. A number of these key assumptions are discussed in the next section of this report.

Substitutability between livestock and meat exports

A key issue in estimating the economic significance of Australian livestock exports is understanding the nature of the markets to which these exports are destined, and the extent to which processed meat from livestock exported from Australia competes in the same markets as processed meat exported from Australia, and is therefore substitutable. If these are substitutable, then the economic significance of livestock exports is reduced, as a cessation of live exports would be compensated by a related increase in the value of processed meat exports from Australia.

A notable difference in modelling analyses lies in assumptions about the substitutability of processed meat exports from Australia for livestock exports. Some modelling makes the assumption that there is near perfect substitutability, while other modelling assumes that this is not the case and that in the absence of livestock exports from Australia, the demand would be met by other international livestock exporters.

The question is actually more complex than the binary one outlined above. The first stage of the question is whether in the absence of a supply of Australian livestock, the importing nation will substitute processed meat imports for livestock imports. The second stage of the question is, in

the event the importing nation does substitute processed meat imports, will those processed meat imports be sourced from Australia or another national supplier?

The evidence from the market is somewhat mixed. In the case of live sheep imports by Bahrain, there is evidence that a cessation of live sheep imports increased imports of processed sheepmeats from Australia, but also of live sheep from other sources including North Africa and southern Europe.

In the case of the Middle East more generally, the reduction of live sheep exports from Australia over the past decade has coincided with an increase in sheepmeat imports into that region, but has also resulted in a major increase in live sheep imports from Romania, Somalia and Sudan among others, and a major reduction in the market share held by Australia. Similarly, the decision by Saudi Arabia not to implement ESCAS accreditation for its livestock supply chains has resulted in that nation instead importing its live sheep from North Africa, rather than Australia. This has, in effect, accelerated the economic development of the sheep industries in those nations and reduced the market share held by Australia, while at the same time having a nett negative impact on animal welfare standards in the importing nation, as a consequence of the removal of Australian influence encouraging the adoption of higher standards of welfare.

In the case of beef cattle, the Indonesian Government clearly has a policy in support of the development of a domestic beef feedlot and processing industry, given the economic benefits both are perceived to bring to regional areas of the nation and the flow-on benefits to local farmers. In the event that Australia ceased live cattle exports to Indonesia, it may be that the short-term response by Indonesia would be to import more processed beef, although India and potentially Brazil (pending changes in the livestock disease status of that nation's beef herd) are likely to be more competitive suppliers of low-value processed beef than Australia. Hence, there is a very real risk that the nett result of such a decision would simply be a loss of overall markets for Australian beef.

It may be argued that, under a scenario where beef supply from Australia is limited, it is better to forego live exports and to instead focus on relatively higher value processed beef exports – even if it means a loss of the Indonesian market. The recent history of Australian beef prices and processed beef production highlight the risks associated with taking that approach. (see figure 24). As a consequence of historically high cattle numbers and a persistent drought throughout Queensland, Australian beef production volumes increased rapidly throughout 2013 as cattle producers were forced to turn off large numbers of cattle for slaughter. This coincided with a marked downturn in Australian beef cattle prices at a time of relatively buoyant global demand, and could be argued to have been the key causal factor.

This argument is supported by the observation that once beef production peaked and then commenced to decline in early 2014, Australian cattle prices increased very quickly to historically high levels. This episode provides strong evidence of the sensitivity of Australian cattle prices to supply changes – at least in the short term. This supports the assumption in the modelling by the CIE, for example, that a transfer of live cattle exports to processed beef would

have a negative impact on beef cattle prices in Australia. This was also supported by the response of the cattle markets to the live export suspension in 2011.

Economic role of red meat industry sub-sectors.

A point of difference in the various modelling exercises is methodologies used in calculations of the economy-wide flow on impacts of changes to livestock export numbers or meat processing throughput in Australia.

The modelling by the CIE (CIE, 2011) incorporated an estimate of both the direct negative impacts on livestock production businesses and positive impacts on meat processing businesses of a cessation of livestock exports. It did not, however, incorporate the indirect economic impacts of these changes through the wider economy (such as, for example, the consumption spending arising from persons employed in each sector).

In summary, the CIE analysis concluded that the cessation of live exports would impose a direct cost on livestock producers and exporters of $318 million in total, but would result in a direct benefit for meat processors of approximately $108 million, resulting in a net national economic loss of $209 million. (Table 4)

The Heilbron analysis (Heilbron, 2010) was limited to the Queensland cattle industry, and incorporated the broader economic impacts of increased processor throughput and the flow on impacts to non-processor activity such as employment by regional input suppliers, service providers and the retail and other sectors (in effect the multiplier effect of additional meat processor activity), but ignored any potential reduction in livestock producer income and the related multiplier effect of this reduced farm income on regional economies, in calculating the net impacts of reduced meat processor throughput.

The deficiency in the CIE assessment of the economic impact of livestock exports could be corrected by applying appropriate multipliers to the value of the additional processor output and the reduction in value of livestock farm incomes in order to calculate the full economic impact of both these changes on the national economy. Conversely, the deficiency of the Heilbron analysis could be corrected by adjusting livestock producer incomes downwards relative to the projected fall in livestock prices, and then applying an appropriate multiplier to that income loss to estimate its full economic impact.

While there is very limited Australian literature on what multipliers should be used, a recent Canadian study has addressed similar questions, specific to the livestock production and meat processing sectors of that nation. (Kulshreshma et al 2012). The Canadian analysis identified that a $1 change in farm sector economic output resulted in a total of $3.30 of economic impact in the economy, when all direct and indirect impacts were taken into account. For the meat processing sector, a $1 change in output resulted in a total $2.90 of economic impact.

Whether these multipliers are appropriate for the Australian livestock and meat processing sectors is difficult to judge, although it would seem likely that the relevant multiplier for northern

Australian cattle production would be lower, given the lower intensity of management and inputs compared to Canadian livestock production systems.

However, even if the appropriate multipliers for the two industry sub-sectors in Australia were found to be different, the differences would not be of an order of magnitude that would be sufficient to result in the increased economic output of the processing sector negating the reduced economic output of the livestock sector.

Irrespective of net economic impacts, what these respective analyses also highlight is the revenue distribution changes associated with the livestock export trade. The CIE (CIE, 2009), Acil-Tasman (Acil-Tasman 2009) and Kingwell (Kingwell, 2011) analyses all highlight that in aggregate, the availability of live export markets increases the revenue flowing to the livestock production sector, while at the same time reduces the revenue available to the livestock processing sector.

This observation applies at the national level, although it is apparent that it is not the case at the regional level. In the case of the Kimberley, Pilbara and Gascoyne regions of WA, for example, it is arguable that the absence of the live cattle export market would not have a positive impact of the meat processing sector, as there are no processing facilities within economic transport distance for livestock producers in these regions. A cessation of livestock exports would likely result in a significant down-scaling of cattle production in these regions, without any resulting benefit flowing to the processing sector.

Additional impacts of the livestock export market.

The above analyses capture the 'tangible' or measurable economic benefits associated with the Australian livestock export trade, but do not capture some of the less tangible impacts. These were discussed, although not quantified, in several of the analyses referred to above. (CIE 2011 and Kingwell 2011.). These intangible benefits include;

- productivity improvements —where access to the live export industry has supported a range of changes resulting in strong productivity growth across the broader northern beef industry.
- increases in land values in both northern and southern beef properties —where the live export industry has bolstered expected future returns, it is likely to have been a contributing factor to significant investments in land acquisition.
- a range of other regional economic benefits —where a net increase in the value of livestock has supported an increase in net farm returns, and broadened the economic base of farms. This includes the emerging importance of indigenous cattle production in regional and remote areas of Northern Australia. (CIE, 2011)

These benefits are not necessarily a result of livestock export markets *per se,* but rather are a result of the market opportunities and additional farm revenue that has been made possible in specific regions as a consequence of the market. It is arguable that some of these benefits could just as easily have been derived from a sustained increase in livestock prices, although the

absence of economically viable slaughter market opportunities throughout much of central and northern Australia dictate that very large price rises would be necessary to bring about the same results in some – although not all regions. In such a situation the supply response by southern Australian cattle producers would also be likely to dampen the price rises in northern Australia, making these outcomes less likely.

An additional intangible benefit associated with livestock export markets is the improved risk management capacity that the availability of these markets provides for managers of livestock businesses. In the absence of these markets, livestock farmers facing adverse seasonal conditions invariably had to turnoff unfinished stock to restocker or slaughter markets at depressed prices. In remote areas, the reduced prices of offer often make it uneconomic to muster and transport stock to markets, meaning stock were left to fend for themselves. This resulted in negative impacts in relation to both animal welfare and natural resource management issues. The availability of a strong market for unfinished livestock in the form of live export markets provides much increased flexibility for livestock managers in specific regions, although this is not easily quantified in economic terms.

Conclusion.

The results of research evaluating the economic impact of the livestock export trade for Australia are varied, and heavily dependent on the assumptions used and the scope of the economic impacts considered. Comprehensive studies which evaluate the economic impacts of the trade on both the livestock production and the meat processing sectors conclude that the trade brings significant net positive economic benefits, while acknowledging the negative impacts that increased livestock exports have on the meat processing sector.

For the most recent period over which statistics are available, live cattle exports were valued at $1.35 billion (fob), live sheep exports at $244 million, and live goat exports at $9.6 million. In aggregate this amounts to a 60% increase since the CIE analysis which involved data for the five-year period to 2008-2009. This increase is in line with increases observed globally in livestock trade over recent years, and means that the nett benefit the trade now delivers for Australia is probably between $350 and $400 million per annum. The extent to which this will continue to increase is dependent on a wide range of factors in destination markets including rates of per capita wealth growth, urbanisation, the distribution of transport infrastructure and services such as electricity, and changing religious and cultural mores. In addition, it is apparent that a wide range of other nations are participants in livestock export markets, and these are becoming more competitive over time.

7. Case-study analyses of Australian livestock farms.

The previous section of this report involved an analysis of the broad economic impact of the livestock export trade on the Australian economy. While such analysis is important, it does not always capture the full impacts live export markets, including some of the less tangible impacts that arise at farm level. This section of the report attempts to provide insights into these issues, utilizing case studies of five different agricultural business which supply the live export trade. In each instance the impact of live exports on enterprise management and profit is examined, and contrasted with a hypothetical scenario whereby live export markets were not available.

Each case study utilises financial and production data for a specific farm enterprise, based on discussions with the owners of the enterprises, and farm management consultants involved with, or familiar with that farm business.

Case Study A – Beef Enterprise in Northern Australia.

Enterprise type:	Cattle breeding - - Brahman / Brahman X herd
Size:	135,000 hectares
Location:	Northern Queensland - Gulf
Rainfall:	800 mm/year
Stocking rate /number	0.05 AE*/ha – 7,167 AE – Beef only
Farming enterprise supporting two families	
*AE – Numbers of adult equivalent cattle	

Background

The subject of Case Study A is a 135,000 hectare (333,592 acres) extensive grazing property located close to the Gulf of Carpentaria in north western Queensland. The property comprises of native savannah pastures and woodlands on riverine and open flood plains in the Gilbert river catchment. The country is gently sloping sandy plains, dissected by numerous perennial and non-perennial streams flowing to the Gulf of Carpentaria, which produces reliable pastures. These major streams can flood out over wide floodplains during the wet season but contract to narrow and occasionally intermittent channels and waterholes during the dry season. They are supported by a number of man-made watering points which provide high volumes of good quality water for livestock.

The climate is tropical, with annual rainfall generally around 800 millimeters (31 inches). Almost all the annual rainfall occurs between December and March. The months from May to September are rainless in over 60 percent of years (with the month of August being rainless in over 80% of cases). Rainfall is contingent on monsoonal weather patters and occasional severe cyclones.

Enterprise

The property supports 2 families and one full-time employee. Contract musterers are employed to help with two mustering periods.

The property has approximately 2,000ha of improved pasture (buffel and legumes); native pastures with seca and verano stylos and wynn cassia.

The cattle herd is a predominately Braham and Braham cross self-replacing herd. Young steers and heifers are turned off for export as live feeder cattle. The target weight for sale cattle is 325-345kg at port.

This business is a well-established family operation, which has survived a number of challenges including lightning fires destroying pastures and live export market closure and disruption. Over the last couple of years, the focus has been on streamlining operations and improving the asset base.

The operators have identified two main areas for improvement. The first is to improve calving percentages which currently sit around 65%. The main goal is to have all heifer and cows in calf each year, with any non-performers being culled. A sound management program of vibriosis prevention has been established with a vaccination program. Weaning times are optimized with regard to nutrition. This includes the segregation of first-joining, first-calf and second-calf heifer groups into individual paddocks to ensure each female has access to adequate nutrition without competition. Paddocks with the best available feed (spelled paddocks) are reserved for these heifer groups which also receive mineral supplementation.

The second area for improvement in the business is pasture management. This includes maintaining pastures dominated by perennial grasses for reliable stock feed, promoting a high level of ground cover (promoting soil health), rotationally grazing pastures to allow a rest period to replenish plants. Improved pastures to finish stock will continue to be established and developed.

The business has invested in a number of permanent watering holes in paddocks that were previously without permanent water sources. This has allowed the opening up and utilisation of additional country. This is an ongoing project, allowing the business to increase stock numbers and options for finishing cattle. The operators have also been considering an investment in irrigation.

Business with live export market

The live export market allows the business to carry 4,000 mature breeders and to operate as a self-replacing herd turning off yearling steers and surplus heifers as feeder cattle for the Indonesian market. The herd comprises of 6,338 adult equivalents (AEs), which is well above the 1,500 head number identified by Meat and Livestock Australia (MLA), below which a lack of scale becomes a constraint to profitability.

Current arrangements are able to accommodate pronounced seasonality and allow sustainable use of pastures. Mustering takes place in May and September-October which provides two main inflows of cash during the year.

All yearling steers and surplus heifers are sold for live export via Townsville. The Indonesia trade requires animals in the 260-350kgs weight range. Feeder cattle are generally grown out by 14-16 months with a maximum of 18 months. This takes advantage of wet season production by ensuring availability of fresh pastures and forage at weaning and calving time. It allows flexibility within the enterprise, to bring forward or delay turnoff depending on prices and seasonal conditions. In the 2015 wet season below average rainfall (around 500 mms) was experienced which lead to a decision to turn off cull stock at lighter weights, while still allowing breeding stock to be retained. Although the last three years have been drier than normal, there has been sufficient feed to run the operation at the current stocking levels.

In 2015 the business sold 960 steers and 341 heifers, and a small number of cull cows and bulls through Townsville at an average return of $217.51/AE. Gross Income over the year was aided by a lower Australian dollar and strong market demand.

EBITDA (Earnings before interest, tax, depreciation and amortisation) for 2015 was calculated at $87.63/AE. Overhead expenses were $41.03/AE and variable (enterprise) expenses were $56.60/AE.

The business is carrying debt of $81.15/AE but retains over 97% equity and 9:1 ratio of interest coverage (gross income as a ratio of interest costs). The business is performing relatively well, given recent drier than average seasons. It is on track to reduce debt and invest in growth strategies to facilitate family succession which will need to occur in the next 10-15 years.

Business without live export market

Two enterprise scenarios have been considered in response to a hypothetical cessation of live exports

1. Maintain current herd composition and send feeder cattle to Charters Tower or to a feedlot for finishing.

2. Run lower core number of breeding cows to enable steers and heifers to be held for longer and the be sold when slaughter weights of 300-400 kilograms are achieved.

Sending cattle to Charters Towers (a livestock exchange centre) would incur very similar variable and overhead costs, however prices received would fall by 40-50 c/kg. This option is much less

viable than the current live export option. A possible alternative may be to slightly increase margins by selling direct to feedlotters, rather than through saleyards.

If the enterprise changed from providing feeder cattle to slaughter-ready cattle, it would need to reduce the breeding herd from 4,000 to 3,300 in order to have the capacity to retain the younger stock until they reach slaughter weight. This would have flow on effects on pastures, stock movements, and mustering schedules. It would involve a higher stocking rate. Income under this arrangement is estimated to be $131.72/AE with $40.21/AE in overhead expenses and $55.76/AE in enterprise operating expenses.

EBITDA under this option is estimated to reduce to $4.14/AE which is insufficient to grow the business or reliably cover costs.

Changing the dynamics of the herd and the enterprise would incur financial and time cost. An investment of additional capital would be required to maintain current breeding herd numbers by developing areas that currently don't have reliable watering points. Investment in improved pasture or finishing blocks would be needed in order to achieve desired turnoff weights. However, maintaining current output by managing an increased area of land may come at a cost in drier years when the risk of stock not reaching slaughter weight and having to be retained for longer would be greater.

Summary

With live export market -

Total Income (2015)	$1,501,284	($217.51/AE)
EBITDA (2015)	$ 604,839	($87.63/AE)

Without live export market

Total Income (2015)	$ 927,577	($131.72/AE)
EBITDA (2015)	$ 29,144	($4.24/AE)

Key Issues

The **profitability** of this enterprise is driven by breeding cow numbers. This has a direct relationship to the ability of the business to generate income. In the absence of a live export market, breeding herd numbers would have to be reduced, with a resultant loss of income. Lower income would reduce the ability of the business to service debt, cover the cost of capital investments, to invest in potential growth strategies, and save for superannuation.

Operationally, the cessation of live exports would reduce marketing flexibility. Currently the business can sell cattle into a range of different markets including the live export, backgrounding & finishing and restocking markets, depending on prices on offer. The aim of the current operation is to be more efficient by turning off a younger, growing animal. Weight gain is more efficiently achieved by younger animals than by larger animals which need to lay down more energy-dependent body fat.

The business has used the live export market to optimise production around seasonal constraints. **Timing** is the key, and currently the business has developed timelines that mesh well with market requirements. Additional **capital** investment would be needed if the enterprise changed to producing slaughter animals. **Environmentally**, growing stock out to heavier weights would require suitable pasture to be available year-round. This would require additional paddock and watering infrastructure to enable grazing pressure to be managed during the dry season.

The business is at a key stage of building and growth, which is essential as **family** succession has commenced. The next 10 years will be a critical period for building off farm wealth for the older generation.

Case Study B – Mixed cropping and sheep enterprise in Western Australia.

Enterprise type:	Wheat, Barley, Canola, Lupins and Sheep
Size:	4,800 hectares
Location:	Wongan Hills, WA
Rainfall:	375 mm/year
Stocking rate	3.84 DSE per winter grazed hectare
Farming enterprise supporting two families	

Background

Case Study B is a 4,800 hectare (11,861 acres) mixed cropping property located in the wheat belt of Western Australia. There are a range of soil types on the property including red loams, gravel over clay, yellow wodjil sands and grey sands on undulating land with some granite outcrops and remnant vegetation.

The climate is warm and temperate (Mediterranean). This region experiences hot, dry summers and cool, wet winters, with an average rainfall around 385 mm.

Enterprises

The property supports 2 families and uses additional casual labour during sowing and harvesting times. The farming operations involve a rotational cropping system using minimum tillage and growing wheat, barley, lupins and canola. The livestock enterprise involves 1,315 merino ewes and offspring.

Seeding begins in mid –late April and extends through to mid-June, with harvest commencing in October. Farm operations are scheduled around the cropping calendar.

The business is currently focused on enriching soil health (particularly all the physical, chemical and biological characteristics), in order to sustain and improve crop yields and control and minimise any weed infestations. Improving soil health benefits the sheep enterprise by enabling the production of a heavier, fertile and healthier animal. Compost fertilisers have been used for a number of years, which improved fertility by increasing humus content within the soil.

The sheep enterprise holds a degree of sentimental value for the older generation in the business, who retain an interest in breeding big framed, well conformed and heavy fleece-weight sheep. More pragmatically, the sheep enterprise has been integral part of summer weed control, with the sheep feeding on the stubbles and any summer growth.

Business with live export market.

This business is typical of many traditional wheat belt farm businesses, in that the main focus is on cropping, and the sheep are a secondary, complimentary enterprise. While many enterprises in this region have converted to different sheep breeds, particularly prime lambs, the enterprise continues to breed Merinos with a focus on lowering fibre diameter, maintaining and increasing fleece weights, and improving overall frame, structure and confirmation. The owners believe that the versatility of merinos offers marketing and managerial flexibility.

The business has a core self-replacing breeding flock of 1,315 ewes. The average fibre diameter of the wool produced is 20.5 microns, although the goal is to move down to 19 microns. Finer micron rams have been introduced into the breeding program and ewes with wool coarser that 20.5 microns in diameter have been preferentially culled.

In previous years, a regular line of wethers has been sold to the live export trade. This is an opportune market that fits in well with the production cycle, with these animals turned off in March or April. The location of this business provides many options for selling sheep. The Muchea Livestock centre and a number of abattoirs are within a 150km radius, which creates the opportunity to sell stock from the paddock.

While the majority of the income is derived from the cropping enterprise, the sheep enterprise adds important additional income, weed control and is naturally suited to the crop rotation schedule. The wethers are by-product of the wool production system. The live export market provides a valuable market for older wethers.

Higher than average rainfall was experienced in 2015, resulting in plentiful feed and water. In early autumn the opportunity arose to sell the 18 months-2 year-old wethers (22kgs) for live export at a higher price than was available through the local saleyards.

Business without live export market.

Three enterprise scenarios have been considered in response to a hypothetical cessation of live exports

- Sell mature wethers as stores at Muchea livestock centre
- Retain wethers to a higher weight and then sell them to the abattoirs.
- Sell the wethers as store sheep to be fattened before sale for slaughter.

Live export was a more profitable market option in 2015. It allowed the stock to be turned off in the period from late summer to late autumn which is suited to cropping calendar.

Keeping the sheep on longer can impact on the cropping rotation and operations. In the absence of live exports, saleyards and abattoirs could receive an influx of sheep being turned off at the end of this period, dampening prices. If the wethers were retained, it is estimated an additional 120 hectares would be required for grazing during the winter months for the whole flock.

As the wethers are by-product of the wool production system, the sales of excess stock to the live export market has been more lucrative in recent years than alternative options.

As the sheep enterprise is only a small percentage of the overall picture of this farm business, the different options available for the sale of wethers does not have a big influence on the profitability of the farm business, but the live export market is extremely complimentary from an operational perspective.

Summary

With live export markets -

Total Income (2015)	$2,703,904
EBITDA (2015)	$ 834,241

Without live export markets

Total Income (2015)	$2,701,830
EBITDA (2015)	$ 832,254

Key Issues

The overall **profitability** is not greatly affected by the availability of the live sheep export market as the sheep enterprise accounts for only 5% of the overall enterprise income. Nevertheless, if the market was not available, 2015 revenue would have been reduced by $2,000.

At a farm **operational** level, access to the live sheep export markets has important timing advantages, as the wethers can reliably be grown to the desired weight on crop stubbles. Farm operations would need to be changed if the wethers were kept on until they reached the heavier weights required for the slaughter market. This would require a reduction in cropping area, supplementary feeding or the availability of agistment. This would have a direct impact onto the variable cost of the enterprise (and even the cropping enterprises) and would only be viable if it resulted in the generation of additional income.

From an **environmental** perspective, the retention of wethers to a heavier weight probably has little impact, except in dry years when there would be less flexibility to manage groundcover.

Sheep enterprises are more labour intensive than cropping enterprises, and retaining wethers to slaughter weight may require additional labour. Ensuring labour requirements for sheep are complementary to labour requirements for cropping operations is crucial to the success of a mixed enterprise farm business.

Case Study C – Mixed livestock and cropping enterprise western Victoria

Enterprise type:	Wheat, Oats, Canola, Cattle and Sheep
Size:	1,265 hectares
Location:	Penshurst, VIC
Rainfall:	800 mm/year
Stocking rate	12.5 DSE /hectare
Farming enterprise supporting two families	

Background

Case Study C is a farm of 1,265 hectares (3,125 acres) located near Penshurst in the Western Districts of Victoria. The property consists of gentle undulating country, with 100% arable volcanic soils.

Average rainfall is 700mm/year. Recent seasons have been drier than average with 570mm falling in 2015 and 545mm in 2014.

Enterprise

The property supports 2 families. The older generation is semi-retired and usually work only at peak times e.g. shearing, sowing and harvesting.

Farm enterprises include cattle, sheep, wheat, canola and feed oats, and in some years, grazing oats, or faba beans. The property has areas of winter-dominant perennial pasture with a phalaris and sub clover base, and summer-active pastures of lucerne and chicory.

The cropping rotation is focused on cereals. Canola is used as a break crop and minimum tillage is used. The farm business is operated at a very conservative stocking rate, which provides the opportunity to buy in livestock or to store fodder depending on prices and seasons.

The cropping rotations support both the sheep and cattle enterprise, allowing lambing to occur in late winter to early spring, and calving to be timed for autumn. Pasture and cropping stubbles are fully utilized and supplementary feeding is generally avoided.

The cattle enterprise involves 250 Angus breeder cows. The aim is to grow out the young steers to 14-18 months, then send them to a feedlot under a contract feeding arrangement, before selling them directly to a number of processors. Excess heifers are sold at weaner markets.

The sheep enterprise is a merino based self-replacing flock running around 1,800 breeding ewes. Generally, cull ewes and rams are sold through the yards at Hamilton and the older wethers are sold for live export or directly to a processor.

Business with live export market.

Traditionally, many farm businesses in the district were livestock based. In the past 15 years there has been a shift toward cropping due to the better returns available. During 2015 a disappointing spring was experienced with lower crop yields.

In 2014, 40% of the farm income was generated by the livestock enterprises, and 60% was generated from cropping. With the recent dry seasons along with the prices for livestock, there has been a slight reversal in the income generation for the 2015 year, with 46% of total income generated from livestock and 54% from cropping enterprises.

The live export market for wethers provides the business with the flexibility of selling older wethers to live sheep exporters at Portland. Selling wethers into this market requires little management adjustment and can occur opportunistically. The proximity of Portland, being only 100 kilometres to the south of this property, provides the business with the flexibility to take advantage of the live export market.

Selling 734 wethers to live exporters provides additional income of $5,919 ($8.06 per head profit). Such lines of older wethers normally have little value in other markets.

Business without live export markets

With a diverse farming businesses, it has been important to factor in all the enterprises and their impact on the businesses profit and bottom-line.

Live exports provide a premium return for a secondary product, this being older wethers retained for wool production. Saleyards and sometimes processors do offer alternate market but in previous years have offered consistently lower prices.

Certainly if the live export market was not available, the business would have received a lower price for their older wethers, with no option to generate extra revenue to compensate for this price difference.

Modelling scenarios either with or without access to live export markets does not show a major variation between these two options. Under both scenarios the business maintains equity levels of around 90%, with a little difference in the EBITA. There is also only a small change in the estimated return on equity ratio, being 13.03% with live export, and 12.98% without live export. This is due to the underlying importance of the cropping enterprise which generates 54% of total farm income.

Summary

With live export markets -

Total Income (2015)	$1,356,158
EBITDA (2015)	$ 611,285

Without live export markets

Total Income (2015)	$1,350,239
EBITDA (2015)	$ 605,613

Key Issues

Selling older wethers for live export provides an extra small profit for the sheep enterprise. It may only amount to $5,919 in extra income, however this equates to an extra $8.06 per head. While this doesn't underpin the **profitability** of sheep enterprise or the farm, it is extra profit. Profit allows the business to service debt, invest in capital infrastructure and potential growth strategies, as well as funding drawings and superannuation.

Timing in a farm operation is paramount. It is preferable to sell wethers after shearing, with the wool proceeds becoming additional income. This produced additional benefits in 2015 due to buoyant wool prices. The live export option for the wethers provides extra management flexibility, with decisions able to be made depending on feed availability, the specifications for consignments for live export as well the prices being offered at saleyards or on-farm from processors.

From a farm **capital** perspective, the requirements are similar irrespective of whether or not live export markets are available.

There is little difference in natural resource management whether or not live export markets are available. There may be a minor impact in dry years in the absence of live export markets if sale sheep need to be retained for a longer period.

There is no difference in labour requirements for farm operations either in the presence or absence of live export markets.

Case Study D – A pastoral zone sheep and goat enterprise.

Enterprise type:	Prime lambs and goats
Size:	25,000 hectares
Location:	Wilcannia, Western NSW
Rainfall:	225 mm/year
Farming enterprise supporting one family	

Background

Case Study D is a 25,000 hectare (61,766 acres) NSW Western Division property located near Wilcannia, in western NSW. The property consists of hilly land that has escarpment country with creeks and gorges, and which opens into some timbered, saltbush and blue-bush flats. The property is well watered with a number of (rain-fed) tanks (dams) which support sheep production and incidental populations of rangelands goats and kangaroos.

The rainfall is 225mm (10 inches) which falls sporadically over the year. Wilcannia has a semi-arid climate with hot summers and mild to cool winters.

Enterprise

The property supports one family, and employs casual labour during high stock handling periods, and during periods when goats are being trapped.

The sheep and goats utilise native pastures. These include perennials – woollybutt grass, bladder saltbush, mitchell grass, and curly windmill grass, as well as annuals - blue crowfoot, medics, and button grass. The business is aiming to retain 60% total groundcover (to protect the soils from wind and water erosion).

The operators manage the total grazing pressure (TGP) from domestic, native and feral grazing animals carefully. Goat populations on the property have doubled over the past decade, and feral pigs also cause damage to watering points. Competent management of total grazing pressure is paramount to environmental and economic sustainability.

Key steps to reducing total grazing pressure have been to build a number of smaller goat paddocks and to regulate watering points. This provides the ability to turn off the water at troughs and the use of spear yards around the tanks/dams. The property has developed a short-term grazing management plan based on the seasonal growth of native pastures with current medium term weather forecasts taken into account, as well as a long-term plan based on increasing the extent of goat-proof fences and spelling pastures.

The property has a history of breeding merinos but has been shifting to dorper production, which have provided higher returns. Dorpers were selected due to their higher feed conversion and high fertility in semi-arid conditions. Pure dorpers have an advantage in that they shed their fleece which means that no shearing, crutching or blowfly control is needed. They also tend to gain weight quickly and have superior carcass conformation and fat distribution in comparison to merinos and cross-breeds.

In 2015, 2,600 weaner goats were harvested for sale. The market options were either to sell these for slaughter at Charleville, or to supply them to a local depot for live export. Because prices for both slaughter and live export goats vary considerably, no assumption was made about a price premium in either market.

Business with live export markets

The growing market for goats has been a very important one for the financial sustainability of NSW Western Division farms over the past decade. Formerly undesirable populations of rangeland goats have been a significant source of revenue for many farm businesses, including this case study farm.

The demand for goats has spiked in recent years, with prices at historically high levels. A local buyer provides the option of either selling smaller consignments of goats to the live export market or to help fill a slaughter consignment, (small lots can be sold within weight specifications), or mustering a semi-trailer load of goats to send to Charleville in Queensland for slaughter. The main advantage provided by the live export market at present (apart from the ability to market heavier goats) is the reduction in freight costs associated with delivery to a local depot, rather than transport to Charleville in Queensland. The freight saving in this instance amounted to $3,907.

The goat enterprise primarily entails harvesting existing rangeland populations, although in recent years, Boer billy goats have been introduced to cross-breed with existing rangeland goats to yield higher carcase weights and dressing percentage. The most saleable goats are generally between 23-25 kilograms, which can be sold to domestic processors. Goats suitable for the Malaysian live export market have a target weight of approximately 40kg. The live export market provides a much more lucrative option for heavier goats.

Business without live export markets

This property is committed to maintaining and reducing total grazing pressure. This aim is made more viable by high goat prices which provide compensation for harvesting rangeland goat populations. Live exports are a minor component of the goat industry, however they provide a boost to overall prices, particularly for heavier goats.

Live exports provide competition and options, as the number of processor buyers are limited in the goat industry. As the rangeland goat enterprise is not managed to the same degree as a normal farmed livestock enterprise with managed genetics and breeding times, it is not possible to achieve the same degree of conformity in the livestock that are harvested and marketed. This means there will always be a range of different weights in the mobs that are harvested, and in the

absence of the live export market the heavier animals would realise much lower prices if consigned to the local processors.

As a pure livestock business it is extremely important for the business to receive the best prices it can. While debt is low, it only takes a couple of poorer season with lower livestock prices to have a very large overdraft.

Summary

With live export markets -

Total Income (2015)	$ 645,936
EBITDA (2015)	$ 256,918

Without live export markets

Total Income (2015)	$645,936
EBITDA (2015)	$253,011

Key Issues

The escalating demand for live rangeland goats in 2015, allowed greater flexibility and opportunity to turnoff rangeland goats, increasing the **profitability** of the farm business. Most goats destined for live exports are sold to local buyers. The difference between domestic and live export markets is the freight costs and weight specifications.

From an **operational** perspective, goats are generally harvestable all year-round, although there are seasonal factors. In drier times, they are more easily found congregated around watering points, however harvesting during this period may not be compatible with the desired weight range.

There is little difference between either a scenario with live export or without live export with reference to the **capital** requirements of the business. Yards and feeding infrastructure could be employed to bring goats to certain target weights.

Drier conditions have resulted in higher numbers of goats. Given the **environmental** goals of the business, which is to reduce the total grazing pressure and maintain minimum ground cover, regular mustering and removal (sale) of goats is paramount.

Either scenario – live export or domestic markets for goats – entails a similar labour commitment for the **family.**

Case Study E – A Victorian dairy enterprise

Enterprise type:	Dairy cattle
Size:	140 hectares plus a separate hay block of 35 hectares
Location:	Leongatha, Gippsland VIC
Rainfall:	1200 mm/year
Farming enterprise supporting one family	

Background

Case Study E is an archetypal Gippsland dairy farm located near Leongatha, in Victoria.

The farm consists of 140 hectares of what is referred to as "bluegum" hill country (rolling hill country with heavy clay loam grey soils). In addition, there is a flatter block of land located 5 kilometres from the main farm consisting of 35 hectares that is used to graze dry stock and for cutting hay and silage.

The climate is temperate and generally humid, receiving an average of about 950mm of reliable rainfall each year. The rainfall received during 2015 was 880 mm, which was somewhat drier than average.

Enterprise

The dairy business involves running between 185 and 200 Friesian milking cows, grazed at a stocking rate of 1.8 cows per hectare. Calving is spread over six to eight weeks starting on August 1st. Calving is timed to match the winter milk price incentive and pasture growth. The dry off period starts in February for 6 weeks. The cows are milked in a 16 stand, swing-over herringbone dairy.

The farm is sub-divided into 48 paddocks which are fenced along the contour of the land wherever possible so as to achieve uniform soil conditions within each paddock. Between four and five hectares are resown each year with new productive varieties of perennial rye grass and clover. In spring the grazing rotation is 17 to 20 days and in winter the rotation is up to 60 days. Hay and silage are produced on an additional leased block, which in a normal year produces enough for the supplementary feed requirements of the herd and provides pasture for heifers and dry cows.

Business with live export markets

Live export markets provide an additional outlet which has helped the business mitigate risk in the past. An example occurred during the past year when seasonal conditions were poor, and the opportunity arose to sell some heifers to the live export market. The decision was taken to hold onto older cows for another season rather than selling them as per usual practice. Instead, it was

decided to retain 20 heifers with superior genetic traits, but to sell the remaining 30 yearling heifers to the live export market.

The sale of heifers eased some grazing pressure arising from the drier spring, and provided additional cash flow. The decision was taken, knowing that the sale will have implications for the business over the coming seasons. Turning off younger cows alters herd dynamics. Keeping older cows can provide a short term lift to productivity as older cows tend to produce more milk than heifers in their first lactation. On the other hand, older cows are more prone to metabolic diseases – milk fever, ketosis etc. and have reduced fertility. Regular disposal of young heifers to the live export market can erode the health and sustainability of the milking herd.

The sale of 30 dairy heifers to the live export market in 2015 generated an extra $28,224 in income for the business with no additional costs, with the income being generated at a crucial time when additional supplementary feed had to be purchased.

In order to be able to sell dairy heifers for live export, there are a number of conditions that need to be met. Each animal has to be Holstein breed, and is inspected for the breed standard colour markings, soundness, absence of severe abnormalities (e.g. freemartin - infertile), and desirable confirmation traits. An Australian Dairy Breeding Animal Certificate which contains pedigree and identification information must be provided. Blood tests are required for disease and heifers are required to be pregnancy tested. If the order is for an in-calf heifer, then pregnancy tests need to be completed by an AQIS-accredited veterinarian.

Business without live export markets

If the decision was made not to sell the 30 heifers for live export, then it would have been necessary to cull approximately 18 older cows. Initially, this would provide less cattle sale income. It would also result in slower rates of herd genetic gain as the live export market provides a high-value market for less productive heifers that will not be retained in the herd and be used for milking and breeding.

Without the live export market the business would have been more financially vulnerable due to the drier season. The live export market provided welcome cash flow for feed and helped reduce debt, and also provided a little more management flexibility within the business

Dairy businesses are fortunate to have regular monthly cash income with regular milk cheques, however they are extremely intensive systems that do not have much flexibility when it comes to seasonal conditions. This can result in variable expenses escalating very quickly if poor pasture growth results in the need to purchase supplementary feed. In this particular season the sale of excess heifers into the live export market enabled this business to generate extra income and reduce debt by $29,944 saving $1,797 in interest.

Summary

With live export markets -

Total Income (2015)	$ 605,485
EBITDA (2015)	$147,773

Without live export markets

Total Income (2015)	$574,761
EBITDA (2015)	$117,829

Key Issues

The sale of dairy heifers to the live export market provided an opportunity for extra cash flow in drier season, helping to maintain business **profitability**. The live export market also provides an alternative market for surplus heifers. It provides particularly good returns for less productive heifers, which are under-valued in domestic markets.

The availability of the live export market also provides an opportunity to achieve faster genetic improvement in the herd.

At an **operational** level, heifers destined for live export are subject to additional requirements including blood testing and industry certification. This can entail a visit from a vet and additional handling in the yards. The prices received generally more than compensate for the cost of this compliance.

Selling to live export markets imposes no additional **capital** costs. The opportunity to generate more income does enable debt to be reduced and reduces interest payments, both of which have a direct impact on profit.

From an **environmental** perspective the selling of heifers instead of mature cows has little impact on the farm's pastures.

The sale of heifers for live export and retention of older cows does not impose any additional labour requirements on the business.

Observations from case studies.

The variety of different enterprises and geographical locations of the case studies detailed highlight that the availability of livestock export markets brings a range of both tangible and intangible benefits for Australian livestock farmers, and that not all of these are measurable as direct economic benefits. The case studies highlight;

- in the case of farm businesses in remote geographical locations, the particular specifications of livestock suitable for live export are often complementary to the requirements of other markets, and hence can provide quite significant financial benefits for those farm businesses. This applies in particular in the case of the northern beef operation, where conditions make it very difficult to consistently produce heavier slaughter-weight cattle, and also for the pastoral goat enterprise, where the live goat export market provides a financially viable market for heavier animals that do not meet the preferred specifications of the domestic slaughter market.

- in almost all the case studies, the turnoff flexibility associated with live export markets provides an important additional risk management option for the operators of the farm businesses. It has long been a feature of livestock production in Australia that during adverse seasonal conditions, large numbers of unfinished livestock are forced onto the market and invariably realise relatively low prices. The fact that live export markets for both sheep and cattle do not require prime or heavier weight animals provides farm businesses with better options when faced with adverse seasonal conditions, and the diversion of these animals to live export markets also invariably reduces the downward pressure on domestic slaughter markets during such periods, to the benefit of all farmers - even those not supplying stock for live export.

- the opportunity to turn off unfinished or out-of-specification livestock to live export markets also provides farmers with important added flexibility in the management of their natural resource base. As is evident from the majority of the case studies, the ability to turn off unfinished or out-of-specification animals quickly in response to adverse seasonal conditions is an important natural resource management tool that better enables farmers to maintain ground cover during poor seasons – with associated natural resource management benefits – and also to achieve a quicker recovery after seasonal conditions improve. Even in instances where live export markets added little to the financial bottom line, farmers acknowledged this benefit.

- A final intangible benefit evident from the case studies is the added competition that the availability of live export markets brings to Australian livestock markets. This is particularly evident in the instances where the geographical location of the farm business severely limits the availability of market options – often down to just one market outlet. Even those livestock producers choosing not to supply live export markets benefit from the added marketplace competition, although quantifying this benefit would be very difficult.

8. Strategic priorities for the future competitiveness of livestock export industries.

The market environment serviced by Australia's livestock export industry is dynamic and rapidly evolving, and entails a range of different risks, as the recent history of these markets highlights.

These risks arise from the fact that the destination markets are commonly in developing nations that do not yet have stable democratic institutions, and as a consequence are subject to unpredictable policy changes that can dramatically impact on trade access arrangements over very short timeframes.

The risks also arise from Australian legislation that decrees that the welfare of Australian-originated livestock remains the responsibility of the Australian exporter, and these livestock retain their national identity to the point of slaughter, irrespective of any subsequent ownership transfer. This legislated requirement is fundamentally at odds with established legal frameworks governing the ownership of livestock, both in Australia and internationally, and is one which is unique to Australian livestock exported for slaughter. This arrangement is not adopted by any other of the more than one hundred livestock exporting nations that are involved in the rapidly growing international trade in livestock.

That Australian livestock exporters have been able to sustain and in some cases expand the numbers of Australian livestock that are exported despite this significant impediment is testament to the high level of competitiveness that has been achieved by Australian livestock producers and livestock exporters.

A review of developments in global livestock markets over recent years highlights that this level of competitiveness will not be easy to sustain in the future. Global trade in livestock is expanding rapidly, driven on the supply side by the emergence of new livestock exporting nations in South America, Eastern Europe, North Africa and Asia, and on the demand side by livestock processing and marketing businesses that are progressively developing multi-national supply chains.

In almost every case, emerging livestock exporting nations are located in regions where businesses operate on a much lower cost base that is the case in Australia, and certainly do not face the same regulatory constraints and associated costs as are faced by Australian livestock exporters.

The potential for future growth of the Australian livestock export sector is enormous, as the global trends discussed in the earlier sections of this report highlight. There is a very large population of middle-class consumers either present or emerging throughout the Middle East and Asia, and the transition that is occurring in the diets of these populations as their per capita wealth increases is driving rapidly escalating demand for animal protein. The following two graphs provide some sense of the potential demand by providing a comparison of per capita animal protein consumption trends in Asian and Middle-East markets,

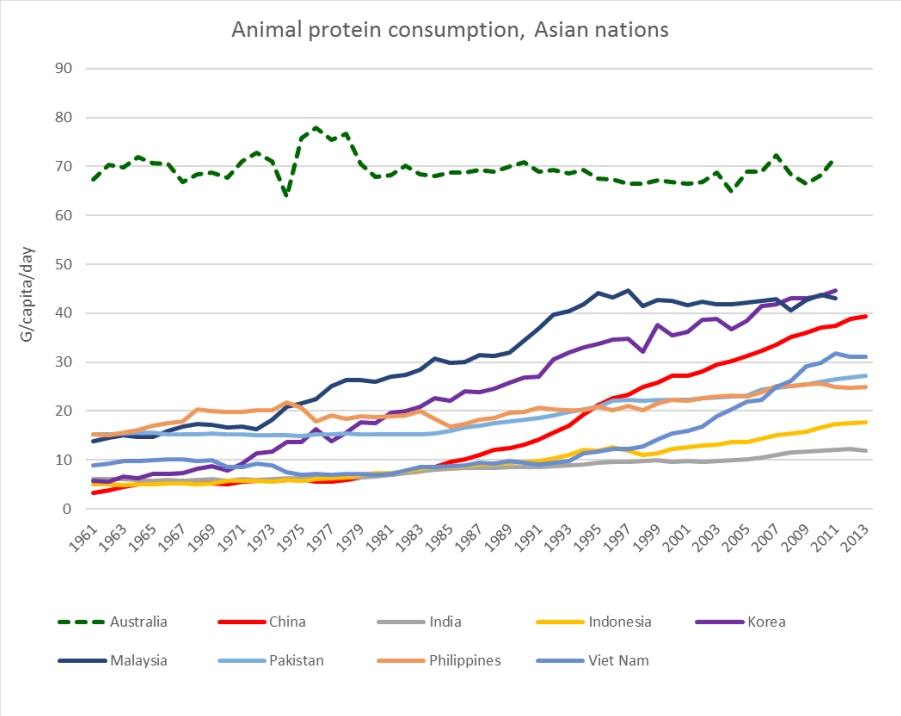


Figure 49. Animal consumption trends, Asia. (Source: FAO)

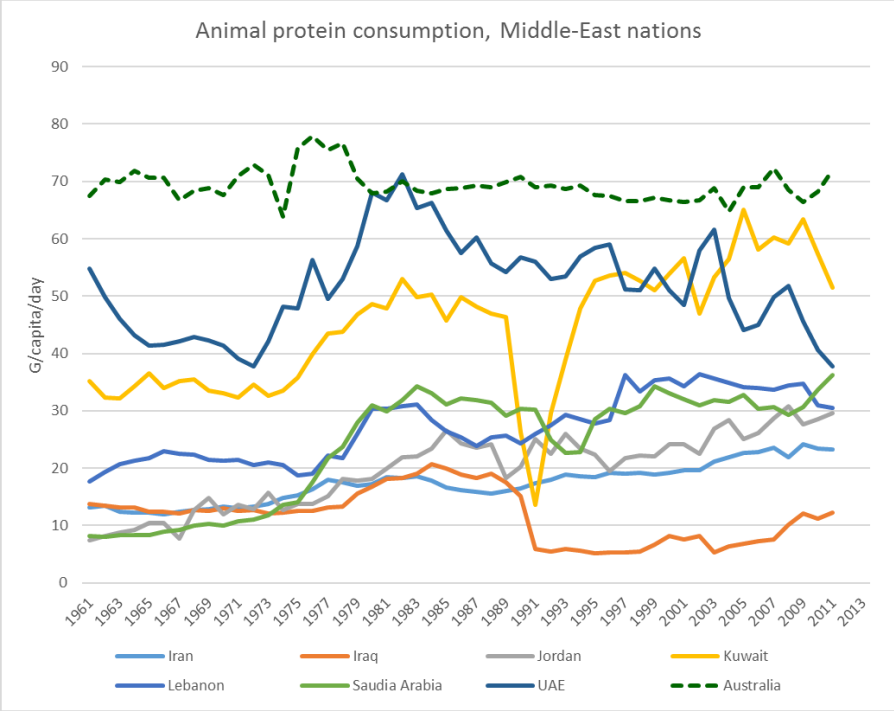


Figure 50. Animal protein consumption trends, Middle East.(Source: FAO)

The graphs highlight that Asian nations in particular lag considerably behind animal protein consumption levels in developed nations, and therefore hold considerable potential for Australian exports. Similarly, many (but not all) Middle Eastern nations also have animal protein

consumption levels that are significantly below levels observed in Australia – highlighting the demand growth potential in these markets.

The geographical and climatic constraints that apply in many of these nations means that they will need to 'outsource' much of the added animal protein production to other nations, and this is being reflected in the surge in demand for meat and livestock imports from these nations. Cultural, logistical, religious and government policy constraints dictate that a continuing proportion of this demand for animal protein will need to be met by livestock imports rather than by processed meat imports. This will provide major opportunities for Australia's livestock export sector, as long as the sector is able to address some of the key constraints that limit its competitiveness. The following sections of this chapter identify key constraints, and propose some strategic initiatives that the sector may need to implement to overcome those constraints.

Transport and logistics.

While in the case of bulk or containerized freight, geographical proximity is only of limited strategic advantage given the relative efficiency of long-distance ocean shipping, this is not the case for livestock shipments. For livestock shipments, short shipping times are a decided advantage. Australia has an important comparative advantage in servicing livestock markets in South-East Asia from northern Australia in particular, given its geographical proximity and the resulting shorter shipping times that are involved in transporting livestock to these markets. The situation for Middle Eastern markets is somewhat different, in that the longer shipping times involved in exporting livestock to those markets from Australia confers less of an advantage on Australian livestock exports than, for example, livestock exports from North Africa or even South America. While shorter shipping times generally confer an advantage, historically low oil prices have reduced the advantage associated with proximity to market.

Australia's comparative advantage in shipping times can be further advanced through the enhancement of transport and logistics infrastructure associated with movement of livestock to port. The enhancement of transport infrastructure in northern Australia is also considered more generally by governments and industry as a key to accelerating economic development across the region by Australian governments. The livestock export sector is one of the major current successful economic sectors that will benefit from these developments, and help to accelerate the economic development of the region.

The development of ports, all-weather roads and livestock depots should be a key focus of the livestock export sector, and indeed of livestock producers across this region. There is an opportunity for livestock exporters to play a very prominent role in planning and advocacy associated with transport and logistics development in northern Australia, and such involvement would also confer stronger recognition of the economic significance of the sector amongst governments and livestock producers.

There are also a number of transport related issues that impact on agriculture more generally, including on livestock exporters and meat processors. These include;

- Road and transport regulatory requirements that differ from state to state and can encompasses animal welfare, driver fatigue provisions, speed & distance on dirt roads, restrictions on road trains, and port fees and charges. All these can have a significant impact on the logistics and costs of moving livestock.
- Shipping logistics and costs are effected by the efficiencies of ports, and ships can also be delayed due to the busyness of the port, boat availability, and the efficiency of unloading at import countries.
- Transport mode coordination, especially between road and rail transport. Queensland has previously transported large numbers by rail although numbers fluctuate widely between years. Interaction and planning around the freight demands of mining and resource industry should be examined further.

One of the many factors affecting livestock exports is the availability of ships that are complaint with animal welfare regulations. There are a number of different shipping companies, many of which retain their own fleet, while others utilise ships owned by overseas companies. Table 7 provides information about current shipping capacity, based on information available from company websites. Given that the capacity to fill boats with an order and deliver the animals to their destination and return is a key factor in the efficiency of the sector, there is merit in ensuring that all participants in the sector have a good understanding of available shipping capacity, projected future availability, and knowledge of regulatory or other requirements associated with shipping livestock from Australia.

Table 7: Live export shipping capacity (Source: Company websites)

Shipping company	Ships	Cattle	Sheep/Goats
Wellards	MV Ocean Drover	18,000	75,000
	MV Ocean Outback	6,000	25,000
	MV Ocean Swagman	6,000	25,000
	MV Ocean Ute	5,000	20,000
Livestock Shipping Services	Bader III	10,000	75,000 or 110,000
	Maysora	12,000	70,000 or 110,000
	Ghena	18,000	16,000 or 85,000
	Dareen	8,000	
Al Shuwiakh			8,000
Northern Australia Cattle Company – Elders	Galloway Express	4,100	

Changing consumer preferences in destination markets.

A key challenge for livestock exporters, as well as exporters of processed meat products, is to obtain and maintain a high level of understanding of the changing nature of consumer demand for meat in destination markets.

The following three graphs, for example, provide details of some of the dynamic changes that are occurring in the Indonesian market – currently Australia's principal market for live cattle exports. Figure 51 shows changes that are occurring in electricity consumption in Indonesia. It highlights the rapid growth of household electricity consumption that is occurring. Much of that growth is undoubtedly associated with growing levels of urbanization, as can be observed from the trends displayed in Figure 52.

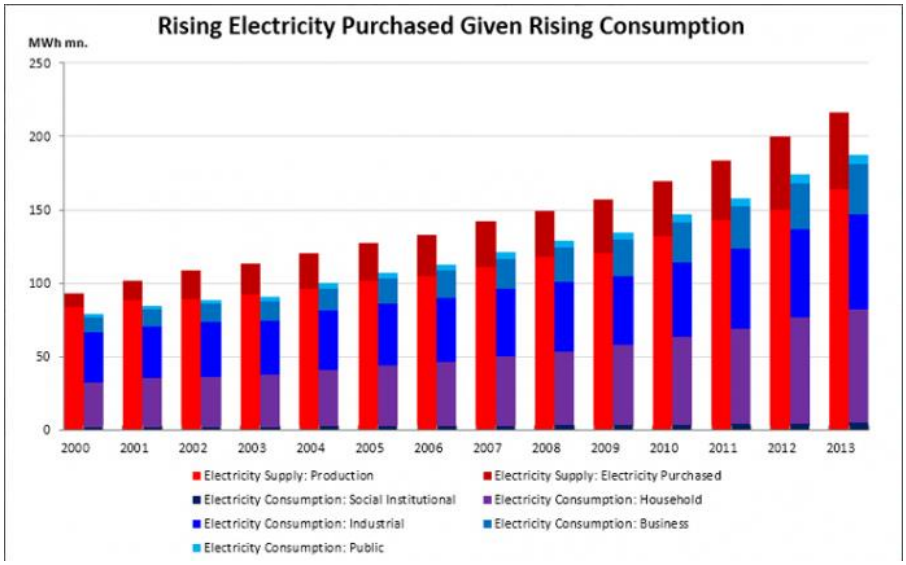


Figure 51: Indonesian electricity purchasing and consumption (Prawira 2014)

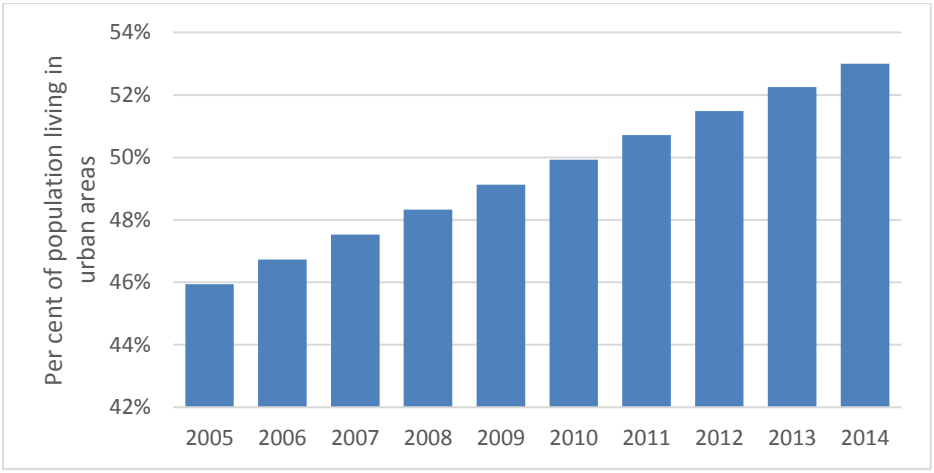


Figure 52: Percentage of Indonesian population living in urban areas. (The World Bank 2015)

With increased urbanization and access to electricity, households are able to purchase refrigerators and store food in the home, reducing reliance on wet markets. This, in turn, has led to increasing demand for processed meat, and given Indonesia's limited domestic beef production capacity, to demand for imported beef. This trend is evident from the data displayed in Figure 53, which shows that processed beef imports are increasing at a faster rate than live cattle imports. A similar trend is observable in relation to sheepmeat markets in the Middle East (see Figure 54).

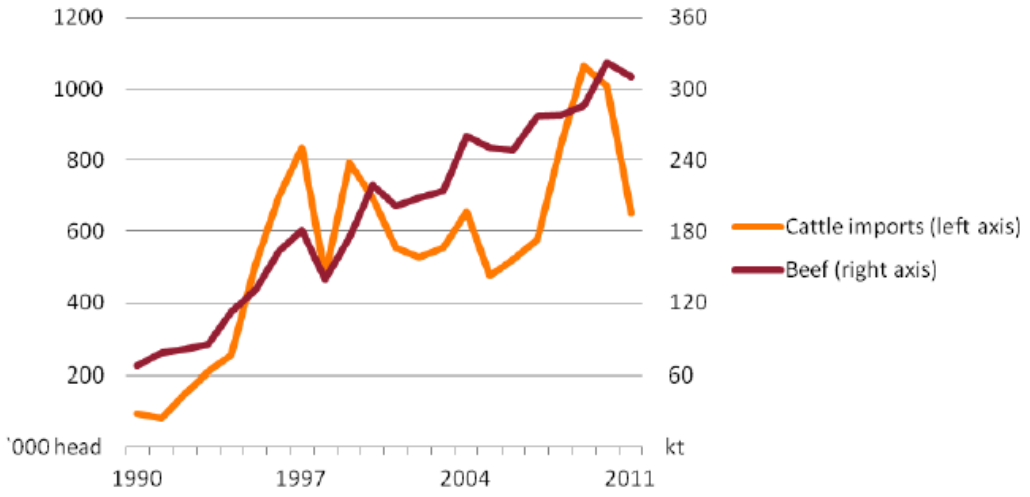
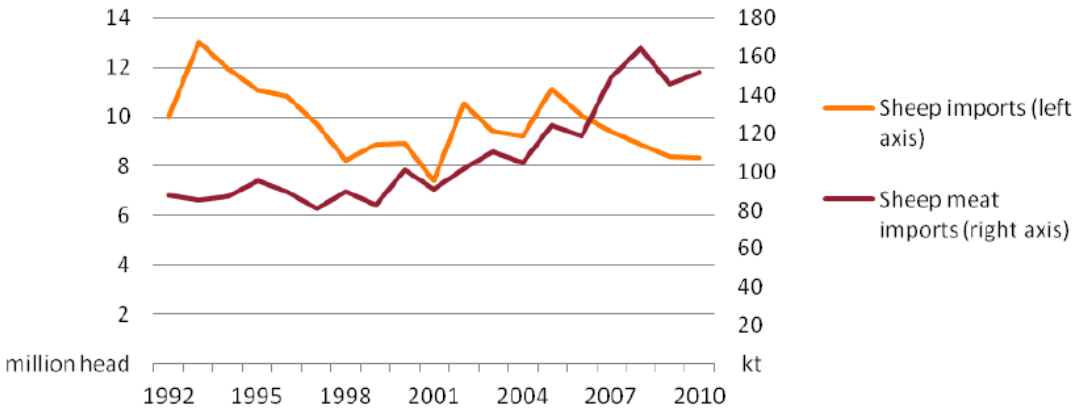


Figure 53: Indonesian imports of Australian live cattle and beef. (Source: Deards, Leith et al. 2014)



Note: Excludes Iran and Syria.

Figure 54. Live sheep and sheepmeat imports, major Middle East importers. (Source: Deards, Leith et al., 2014)

These graphs highlight the dynamic changes that are occurring at Indonesian consumer level, which will undoubtedly impact on demand for live cattle imports over the longer term. The rapid growth in the demand for live cattle exports by Vietnam is another example of how quickly changes are occurring in livestock export markets. Having a robust understanding of these

changes, the factors that are contributing to them, and their longer term implications for livestock exporters and livestock producers will be critical to the continuing success of Australian livestock export industries.

Livestock exporters are uniquely positioned to obtain a good understanding of emerging trends in livestock export markets. While market participants rightly consider the insights they obtain directly from the market to be part of their commercial "intellectual property", from a livestock producers perspective there is considerable value in having some understanding of likely demand trends over a forward 2 to 3-year timeframe, given the timescales necessary for implementing any changes in farm production systems. There is also considerable benefit for livestock producers in having available information about market specifications and shipping dates over a forward three-month timeframe.

From the perspective of both livestock producers and livestock exporters, there appears merit in the development of stronger market intelligence associated with livestock export markets, especially in relation to future demand trends and seasonal shipping trends and timing. The Australian Livestock Exporters Council should either conduct or encourage the commissioning of regular industry market intelligence research that extends beyond just livestock and meat markets in destination markets, and incorporates a broader perspective of changes that are occurring within these economies. The regular compilation and publication of such reports would complement the current LiveLink and industry projections produced by MLA, and at the same time would deliver benefits to the livestock production sector and give them greater confidence to invest and expand production, when appropriate.

Animal welfare and management standards.

The Australian livestock export sector is already a world-leader in relation to the animal welfare standards applied to livestock destined for export to overseas locations. The administrative costs associated with mandated animal welfare systems are considerable, and it is also widely recognised that the offshore elements of ESCAS render Australian livestock exports uncompetitive in some markets, or at the very least significantly reduce their competitiveness relative to other suppliers.

Despite this, there is a very high level of political sensitivity to animal welfare incidents associated with livestock exports, and continuing campaigns in major capital cities by animal welfare activists, seeking to have livestock exports banned. This means that any moves to reduce administrative costs or the regulatory controls associated with the management of Australian livestock in overseas destinations will need to be approached with considerable caution. This issue will also need to be very clearly approached from the perspective of a desire to reduce administrative costs and streamline processes, rather than to lower animal welfare standards.

Australia's livestock export animal welfare standards place the nation in a very strong position to lead global efforts encouraging the adoption of similar standards by all livestock exporters, and efforts have already been made in this regard. The challenge for OIE or any other international

agency seeking the adoption of higher animal welfare standards is that there are now more than one hundred nations that export livestock, and many of these are developing nations in South America, North Africa and Eastern Europe.

Securing agreement by these nations to mandate that animal welfare standards equivalent to those that currently apply to Australian livestock exports should become a global standard will be a very difficult task, involving extensive diplomatic engagement over an extended timeframe. Nevertheless, there is merit in the Australian livestock export sector persisting in efforts to have such standards adopted more widely. Communications associated with such efforts will help to reinforce to Australian policymakers that the Australian standards are world-leading, and will also assist in better informing the broader Australian community about the gap between the very high standards that apply to Australian livestock exports, and the standards adopted by most other livestock exporting nations.

Australian meat processing sector.

There is a commonly held view that the livestock export and meat processing sectors in Australia are in direct competition for access to Australian livestock, and are therefore antagonistic. However, as the analysis and case studies presented in the preceding report identify, this is not the case in many instances.

The live export market commonly provides a market outlet for livestock either that cannot be grown out and finished to the specifications required by domestic processors (due to climatic and geographical constraints), or that are of less interest to the processing sector (for example heavier goats and aged wethers). That is not to say that there is no competition between the two sectors, with heavier live export cattle sourced from more central and even southern areas of the nation being competed for by both sectors. The following graphic assists in putting the market and the extent of competition between the live exports and processing markets in some perspective.

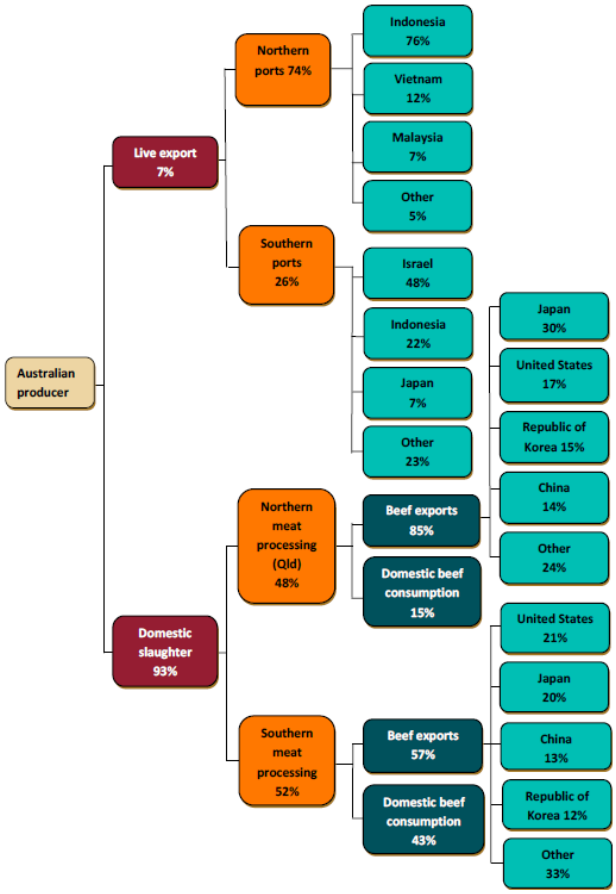


Figure 55.Australian beef cattle industry and markets, 2013. (Source: Deards, Leith et al., 2014)

It is also the case that the sale of lighter cattle originating from northern Australia to live exports reduces the flow of livestock that might potentially be available for growing out by other Australian cattle producers to slaughter weight, or for finishing by feedlotters. Having said that, as the case studies highlight, in the absence of the live export market cattle producers in northern Australia would be less profitable, and producers would be forced to reduce overall stock numbers in order to carry stock to older ages before consigning them to market. This would mean a reduced number of livestock would be available for the processing sector, even if they were subsequently grown out to slaughter weight by another producer or by a feedlotter.

There has been some discussion to the effect that the new Australian Agricultural Company Livingstone meatworks near Darwin and the recently-opened meat processing facility near Broom will be in direct competition with the live export market. However, this is not necessarily always the case. These meat processing works will provide a market opportunity for culled infertile cows and heavier weight animals that are unsuitable for live export markets. Prior to the opening of these processing works, cattle producers in many parts of northern Australia had no real market options for these animals, and simply retained infertile females in particular in the herd after mustering, despite the depressing long-term effect this has on herd fertility levels. The development of a viable slaughter market for these animals will provide an important benefit for

cattle producers in that they will be able to profitably cull infertile females, enabling herd fertility levels to be improved over time, with overall herd productivity benefits.

It may also be feasible to develop irrigated grain and fodder production and cattle feedlot facilities in association with northern Australian beef processing facilities. This would assist in providing a year-round supply of livestock for these facilities, and also create a viable alternative market for feeder cattle. While all these options may be in competition at the margin, all will assist to improve the overall profitability of the northern Australian cattle industry, which will provide incentives to producers to invest in capital develop to further increase output – to the benefit of all markets.

It is also the case that in some geographical locations, the consolidation that has occurred in meat processing over recent decades has reduced the level of competition, to the extent that producers have little choice but to consign their slaughter stock to the sole available meat processor, and to wait until that processor has available processing capacity to take the consignment. The availability of the live export market in these cases provides a viable market alternative, and has the eventual result of allowing the cattle producer to obtain a higher return than would otherwise be the case.

It has been argued that the reduced supply of animals available to the meat processing sector results in a net economic cost to the nations, because of the relatively significant regional multiplier effect assumed to apply to the turnover of a meat processing facility. Available analyses of this issue are incomplete, and ignore various elements of the total picture. More comprehensive overseas analysis of similar issues concludes that the difference between the multiplier effects of farm-level and processor expenditure is not as large as some assume. It is also evident from available data (as would be expected) that there is a net transfer of income from livestock producers to processors in comparisons of the financial outcomes of these different markets for livestock producers.

This is hardly surprising, as meat processors can only offer livestock producers a price that is equal to the export price less the cost of processing, transport and shipping. In a situation such as Australia where meat processing is known to cost significantly more than in most other nations, this means that livestock producers are paying the cost of an expensive meat processing sector via lower returns for their slaughter livestock. The presence of competition from live export markets should exert some competitive pressure on meat processors, helping to ensure that processors remain relatively efficient.

While noting elements of competition between livestock exporters and meat processors, there is no doubt that both segments of the market also have a broad suite of common interests. These include issues such as transport infrastructure, port access, biosecurity, access to personnel skilled in livestock handling and access arrangements associated with international markets. There is likely to be mutual benefit for livestock exporters, livestock producers and meat processors in collaborative advocacy efforts associated with these issues.

Biosecurity.

It is quite evident that a critical element of the competitiveness of Australian livestock in international markets is their relative disease-free status. This is evident both from the higher prices that appear to be paid for livestock originating from Australia, but also from the fact that competitive livestock exporters (such as Brazil) are excluded from certain markets as a consequence of the lower biosecurity standards associated with their livestock.

Maintaining Australia's current biosecurity status in the future, and ensuring that Australia has the capacity to rapidly recover market access in the event of a biosecurity incident are two very important issues that require constant vigilance.

As global supply chains develop within which agricultural products move more frequently across international borders, maintenance of biosecurity standards becomes an increasing challenge. This is compounded by the rapid growth that is occurring in international travel, and by the development of international airports and travel nodes in regional locations – such as Cairns, Darwin, Broome, Townsville and Toowoomba. These increase the risk that a disease incursion originating with a person or product arriving from overseas will be able to spread to Australian livestock.

Australia's capacity to respond to biosecurity incidents has undoubtedly been downgraded over recent years as State and Territory governments have reduced the resources allocated to agriculture and primary industry portfolios, and reduced staff numbers and the numbers of regional facilities from which staff operate. It is difficult to quantify the potential impacts of these changes on biosecurity preparedness and responsiveness, although there is general consensus that this will increase the risk of an incident spreading, and delay the time taken to recover from these incidents.

Livestock exporters and livestock agents are in a somewhat unique position, in being the only groups that have direct and continuing engagement with livestock producers and their livestock, throughout northern Australia. Farm inspections and subsequent management of stock during the pre-shipment conditioning process places Livestock Exporters in a unique position to identify disease or biosecurity outbreaks.

There would appear to be merit in Australian livestock exporters initiating discussions with Australian biosecurity authorities with the objective of ensuring that livestock exporter staff and livestock agents have ready access to appropriate training in the early detection of disease outbreaks or other biosecurity incidents, and in appropriate response strategies in the event a breach is detected or suspected. Having staff trained in biosecurity awareness and response may not deliver direct benefits to individual livestock exporters, but is an 'industry good' initiative that would benefit and be appreciated by the entire livestock industry.

The social licence conferred by the Australian community.

To a greater extent that almost any other agribusiness sector, livestock exporters have been the subject of intense scrutiny by activists and the media, and have on several occasions had the

sectors' 'social licence to operate' revoked. One of the challenges associated with such situations in the past has been the difficulty in having participants in the sector decide on an appropriate response, and also in identifying the person or persons who will articulate that response to the Australian community and to policymakers.

The sector appears to have addressed this shortcoming in recent years, with improved responses and clearer communication strategies. This has been an important step in redeveloping the social licence afforded to the sector, but it by no means guarantees that the industry has greater freedom to operate in the future.

The process of redeveloping a more robust social licence to operate will need to be sustained over the longer term, and will require a multi-faceted strategy of engagement and communication, in addition to actions that aim to ensure that required industry standards are upheld.

Such a strategy invariably involves engagement at local community level, with the media, with policymakers, and with influential opinion leaders. It will of necessity include of information in a range of different formats and media, that is regularly updated and made available. It also should involve routine contact with senior policymakers, to establish connections and networks in the absence of a crisis, so that they can then be better utilized when situations dictate. It is also often considered useful in such strategies to have direct engagement with groups that are strongly opposing the trade, or at least a selected sample of these that are amenable to engagement and discussion.

In relation to influential opinion leaders, there is value in cultivating a group of influential individuals not directly involved in the live export trade, but who are familiar with the benefits the trade brings, and are sufficiently well-informed to speak authoritatively on these matters. These might include regional community leaders and businesspersons, or nationally prominent people in the media or other roles who have their origins in regional communities, or who have a strong personal connection for various reasons. It is notable that activists opposed to the live export trade employ this strategy regularly and to good effect to encourage community support for their position, yet the live export sector has not to date taken a similar approach.

Support of Australian livestock producers.

It is easy to overlook the fact that many livestock producers in southern Australia have only very limited or even no contact with the livestock export sector, and have little understanding or interest in the potential impact of live exports on their businesses. This was evident during the crisis period in mid-2011, for example, when some southern livestock producers were strongly critical of livestock exports, and supported calls for the banning of the trade. Despite this, economic research and recent market experience clearly highlights that the absence of livestock export markets would have a large negative impact on livestock prices nationally, which would last at least for between three and five years and necessitate fairly major industry adjustment.

There is merit in ensuring that a broad general understanding exists right across the livestock industries about the benefits the entire industry gains from the trade. There is no single initiative that is likely to be successful in conveying this information more broadly to livestock industry participants. Instead, a number of different activities will be required over a sustained period, and there is merit in considering whether the research project conducted by the CIE in 2011 may be of value to revisit on a regular basis. This provided some robust information about the impact of livestock exports on livestock prices Australia-wide, and future studies may benefit by focusing more specifically on the impacts within different regions of Australia.

If the global trends observed in livestock exports over the past decade continue, the trade is likely to be an increasingly important element of the total market that is available to Australian livestock producers. An investment in better developing a broad understanding of these issues throughout the entire livestock industry may be quite important in ensuring that this future growth potential is able to be realised.

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9. References.

ACIL Tasman (2009). The value of live sheep exports from Western Australia: A review of adjustments that would be required in live exports ceased. A report prepared for the RSPCA, March 2009

Australian Bureau of Statistics 2015. Statistics accessible at www.abs.gov.au

Australian Government Department of Agriculture, Forestry and Fisheries (2006). "Australian Position Statement on the Export of Livestock ". Accessible at www.agriculture.gov.au

Deards B, Leith R, Mifsud C, Murray C, Martin P & Gleeson T 2014, Live export trade assessment, ABARES report to client prepared for the Live Animal Exports Reform taskforce of the Department of Agriculture, Canberra, July.

Drum, F. and Gunning-Trant, C. 2008, Live Animal Exports: A Profile of the Australian Industry, ABARE research report 08.1 for the Australian Government Department of Agriculture, Fisheries and Forestry, Canberra, February 2008.

Food and Agriculture Organisation of the United Nations. Accessible at http://www.fao.org/statistics/en/

Farmer, W 2011. Independent review of Australia's livestock export trade. Report to the Australian Minister for Agriculture, Forestry and Fisheries. August, 2011.

Government of Australia 2015, Exporter Supply Chain Assurance System Report. Australian Government Department of Agriculture, 2015. Accessible at www.agriculture.gov.au

Goesch, T, Lawson, K, Green, R and Morey, K 2015, Australia's beef supply chains: infrastructure issues and implications, ABARES research report 15.7, Canberra, October.

Industry Government Working Group on Live Sheep and Goat Exports (2011). "Industry Government Working Group on Live Sheep and Goat Exports: Final Report to Australian Government Minister for Agriculture, Fisheries and Forestry."

Kingwell, R., et al. (2011). The Economic Importance to Western Australia of Live Animal Exports. DAFWA. Government of Western Australia.

Meat & Livestock Australia (2015). Australian Sheep Industry projections 2016. Accessible at www.mla.com.au

OECD (2015). "OECD-FAO Agricultural Outlook Database." Accessible at www.oecd.org

Prawira, Y. (2014). "Keeping Up With Indonesia's Rising Energy Needs." Accessible at http://www.ceicdata.com/en/blog/keeping-indonesia%E2%80%99s-rising-energy-needs.

Sd&D and Meateng (2010). North West WA Beef Abattoir Pre-feasibility Study. Government of Western Australia.

SG Heilbron Economic & Policy Consulting (2010). "The Future of the Queensland Beef Industry and the Impact of Live Cattle Exports." Report prepared for Queensland meat processors.

The Centre for International Economics (2011). "The Contribution of the Australian Live Export Industry." Report prepared for Meat and Livestock Australia and Livecorp.

The Centre for International Economics (2014). "The Contribution of the Australian Live Exports to the Australian Wool Industry." Report prepared for Australian Wool Innovations.

The OIE (2011). "Procedures used by the OIE to set standards and recommendations for international trade ". Accessible at http://www.oie.int/

The OIE (2015). "Terrestial animal health code." Accessible at http://www.oie.int/

The World Bank (2015). "Data: Urban Population (% of total)." Accessible at http://data.worldbank.org/

UNcomtrade (2015). "United Nations Commodity Trade Statistics Database: Data Query ". Accessible at http://comtrade.un.org/

World Trade Organsiation (2015). Principles of the trading system. Accessible at www.wto.org

World Trade Organsiation (2015). "Standards & Safety." fAccessible at https://www.wto.org/english/thewto_e/whatis_e/tif_e/agrm4_e.htm.

World Trade Organsiation (2015). Tariff Analyis Online. Accessible at www.wto.org

10. Appendices. Farm case studies detailed data.

Case Study A: Beef Enterprise in Northern Australia WITH live export.

Receipts	2015	$/AE
Cattle gross income	$ 1,501,284	$ 217.51
Sundry Income	$ -	
TOTAL INCOME	**$ 1,501,284**	**$ 217.51**

Expenses	2015	$/AE
Overhead expenses		
Accountancy	$ 8,750	$ 1.27
Advisory Services	$ 3,750	$ 0.54
Depreciation	$ 137,730	$ 19.96
Electricity	$ 19,200	$ 2.78
Fuel, Oil, Gas	$ 35,955	$ 5.21
Insurance	$ 25,200	$ 3.65
Motor Vehicle Expenses	$ 9,700	$ 1.41
Repairs & Maintainence - Improvement	$ 7,800	$ 1.13
Repairs & Maintainence - Plant & Equip	$ 5,470	$ 0.79
Telephone	$ 3,915	$ 0.57
Travel & Accom. Expenses	$ 2,022	$ 0.29
Rates & Rent	$ 23,700	$ 3.43
Sub-total	$ 283,192	$ 41.03
Cattle enterprise expenses		
Livestock purchases	$ 105,000	$ 15.21
Fodder & Lick	$ 15,600	$ 2.26
Freight & Cartage	$ 61,145	$ 8.86
Animal health & NLIS Tag costs	$ 51,844	$ 7.51
Selling Expenses	$ 68,611	$ 9.94
Contract Work	$ 46,232	$ 6.70
Wages	$ 38,795	$ 5.62
Workcover	$ 3,456	$ 0.50
Sub-total	$ 390,683	$ 56.60
Personal expenses		
Drawings	$ 100,000	$ 14.49
Sub-total	$ 100,000	$ 14.49
Capital expenses		
Plant Replacement	$ 92,000	$ 13.33
Property Improvements	$ 168,300	$ 24.38
Sub-total	$ 260,300	$ 37.71
Finance expenses		
Interest on Overdraft	$ 65,939	$ 9.55
Sub-total	$ 65,939	$ 9.55
TOTAL EXPENSES	**$ 1,100,114**	**$ 159.39**
Surplus/Deficit	$ 401,170	$ 58.12

Case Study A: Beef Enterprise in Northern Australia WITH live export *cont'd.*

Cashflow		
O/D opening balance	-$ 1,098,978	
Operating surplus	$ 401,170	
Add back depreciation	$ 137,730	
Closing balance	-$ 560,078	

Overdraft Rate	6%

FARM BUSINESS SUMMARY		**2015**	**$/AE**
Land Area at 30 June (ha)		135,000	19.56
Land Value	$50/acre	$ 16,679,600	$ 2,416.63
Beef herd at 30 June (no.)		6,425	
Cattle Value		$ 3,723,316	$ 539.45
Farm Business Debt		-$ 560,077.99	-$ 81.15
Net asset value		$ 19,842,838	2,874.94

OTHER FINANCIAL INDICATORS	**2015**	**$/AE**
Equity at 30 June (%)	97.3%	
EBITDA	$ 604,839	$ 87.63
EBITDA Return on Equity	3.0%	

Assumptions		
HERD	Brahman/BrahmanX	
Rainfall	540 mm/yr	
Northern Qld - Gulf country - over 1000kms to Townsville		
	2014	**2015**
LAND - Ha	135,000	135,000
TOTAL CATTLE - hd	6,700	6,338
TOTAL BEEF AE	7,026	6,902
Stocking rate (AE/ha) beef only	0.05	0.05

Case Study A: Beef Enterprise in Northern Australia WITHOUT live export

Receipts	**2015**	**$/AE**
Cattle gross income	$ 927,577	$ 131.72
Sundry Income	$ -	
TOTAL INCOME	**$ 927,577**	**$ 131.72**
Expenses	**2015**	**$/AE**
Overhead expenses		
Accountancy	$ 8,750	$ 1.24
Advisory Services	$ 3,750	$ 0.53
Depreciation	$ 137,730	$ 19.56
Electricity	$ 19,200	$ 2.73
Fuel, Oil, Gas	$ 35,955	$ 5.11
Insurance	$ 25,200	$ 3.58
Motor Vehicle Expenses	$ 9,700	$ 1.38
Repairs & Maintainence - Improvements	$ 7,800	$ 1.11
Repairs & Maintainence - Plant & Equip.	$ 5,470	$ 0.78
Telephone	$ 3,915	$ 0.56
Travel & Accom. Expenses	$ 2,022	$ 0.29
Rates & Rent	$ 23,700	$ 3.37
Sub-total	$ 283,192	$ 40.21
Cattle enterprise expenses		
Livestock purchases	$ 105,000	$ 14.91
Fodder & Lick	$ 65,700	$ 9.33
Freight & Cartage	$ 53,172	$ 7.55
Sundry livestock Expenses	$ 34,743	$ 4.93
Selling Expenses	$ 45,573	$ 6.47
Contract Work	$ 46,232	$ 6.57
Wages	$ 38,795	$ 5.51
Workcover	$ 3,456	$ 0.49
Sub-total	$ 392,671	$ 55.76
Personal expenses		
Drawings	$ 100,000	$ 14.20
Sub-total	$ 100,000	$ 14.20
Capital expenses		
Plant Replacement	$ 92,000	$ 13.06
Property Improvements	$ 168,300	$ 23.90
Sub-total	$ 260,300	$ 36.96
Finance expenses		
Interest on Overdraft	$ 81,119	$ 11.52
Sub-total	$ 81,119	$ 11.52
TOTAL EXPENSES	**$ 1,117,282**	**$ 158.66**
Surplus/Deficit	-$ 189,704.78	-$ 26.94

Case Study A: Beef Enterprise in Northern Australia WITHOUT live export *cont'd.*

Cashflow		
O/D opening balance	-$ 1,351,977.94	-$ 191.99
Operating surplus	-$ 189,704.78	-$ 26.94
Add back depreciation	$ 137,730.00	$ 19.56
Closing balance	-$ 1,403,952.72	-$ 199.37

Overdraft Rate	6%

FARM BUSINESS SUMMARY		**2015**	**$/AE**
Land Area at 30 June (ha)		135,000	$ 19.17
Land Value	$50/acre	$ 16,679,600	$ 2,369
Beef herd at 30 June (no.)		6,400	
Cattle Value		$ 3,519,944	$ 500
Farm Business Debt		-$ 1,403,952.72	-$ 199
Net asset value		$ 18,795,591	$ 2,669

OTHER FINANCIAL INDICATORS	**2015**	**$/AE**
Equity at 30 June (%)	93.0%	
EBITDA	$ 29,144	$ 4.14
EBITDA Return on Equity	0.2%	

Assumptions		
HERD	Brahman/BrahmanX	
Rainfall	540 mm/yr	
Northern Qld - Gulf country - over 1000kms to Townsville		
	2014	**2015**
LAND - Ha	135,000	135,000
TOTAL CATTLE - hd	6,852	6,729
TOTAL BEEF AE	7,167	7,042
Stocking rate (AE/ha) beef only	0.05	0.05

Case Study B: Mixed livestock & cropping enterprise in Western Australia WITH live export

Receipts		$
Sheep Gross Income	$	131,977
Wheat Gross Income	$	1,414,040
Barley Gross Income	$	313,174
Lupin Gross Income	$	792,540
Canola Gross Income	$	52,173
Sundry Income		
TOTAL INCOME	**$**	**2,703,904**

Expenses		
Overhead expenses		
Accountancy	$	7,500
Advisory Services	$	11,526
Depreciation	$	125,500
Electricity	$	18,048
Fuel, Oil, Gas	$	167,856
Insurance	$	66,624
Motor Vehicle Expenses	$	15,000
Repairs&Mtnce - Improvements	$	24,768
Repairs&Mtnce - Plant & Equip.	$	108,048
Telephone	$	3,836
Travel & Accom. Expenses	$	4,655
Rates & Rent	$	57,360
Wages and Workcover - casual	$	19,684
Sub-total	$	630,405
Sheep enterprise expenses		
Livestock purchases	$	3,960
Animal health	$	15,077
Freight & Cartage	$	876
Sundry livestock Expenses	$	1,054
Selling Expenses	$	1,997
Levies	$	4,566
Wages	$	11,089
Workcover	$	427
Sub-total	$	39,046
Wheat enterprise expenses		
Seed	$	58,830
Levies	$	15,603
Fertiliser	$	167,904
Chemicals	$	204,803
Freight	$	100,064
Contract work	$	47,700
Insurance	$	120,193
Sub-total	$	715,097

Canola enterprise expenses		
Seed	$	5,500
Levies	$	555
Fertiliser	$	9,867
Chemicals	$	11,632
Freight	$	2,926
Contract work	$	6,325
Insurance	$	4,435
Sub-total	$	41,240
Lupin enterprise expenses		
Seed	$	40,824
Levies	$	8,625
Fertiliser	$	56,700
Chemicals	$	82,565
Freight	$	59,787
Contract work	$	-
Insurance	$	79,254
Sub-total	$	327,755
Barley enterprise expenses		
Seed	$	9,574
Levies	$	3,435
Fertiliser	$	25,872
Chemicals	$	28,688
Freight	$	20,627
Contract work	$	2,992
Insurance	$	26,620
Sub-total	$	117,808
Personal expenses		
Drawings	$	100,000
Sub-total	$	100,000
Capital expenses		
Plant Replacement	$	75,000
Property Improvements	$	40,000
Sub-total	$	115,000
Finance expenses		
Interest on Overdraft	$	139,808
Sub-total	$	139,808
TOTAL EXPENSES	**$**	**2,134,971**
Surplus/Deficit	**$**	**568,933**

Case Study B: Mixed livestock & cropping enterprise in Western Australia WITH live export *cont'd*

Cashflow		
O/D opening balance	-$	2,330,128
Operating surplus	$	568,933
Add back depreciation	$	125,500
Closing balance	**-$**	**1,635,695**
Overdraft rate		6.00%
FARM BUSINESS SUMMARY		
Land Area at 30 June (ha)		4,800
Land Value $1800/ha	$	8,640,000
Sheep flock at 30 June (no.)		2,036
Sheep Value	$	110,733
Farm Business Debt	-$	1,635,695
Net asset value	$	7,115,038
OTHER FINANCIAL INDICATORS		
Equity at 30 June (%)		81.3%
EBITDA	$	834,241
EBITDA Return on Equity		11.73%
Assumptions		**2015**
LAND - Ha		4800
Total sheep no		2691
Total Cropping hectares		3842
DSE rating		4.85
Rainfall May-Oct	254mm	
yearly	*325-450*	

Case Study B: Mixed livestock & cropping enterprise in Western Australia WITHOUT live export

Receipts	$
Sheep Gross Income	$129,903
Wheat Gross Income	$1,414,040
Barley Gross Income	$313,174
Lupin Gross Income	$792,540
Canola Gross Income	$52,173
Sundry Income	
TOTAL INCOME	**$ 2,701,830**

Expenses		
Overhead expenses		
Accountancy	$	7,500
Advisory Services	$	11,526
Depreciation	$	125,500
Electricity	$	18,048
Fuel, Oil, Gas	$	167,856
Insurance	$	66,624
Motor Vehicle Expenses	$	15,000
Repairs& Maintainence - Improvements	$	24,768
Repairs& Maintainence - Plant & Equipment	$	108,048
Telephone	$	3,836
Travel & Accom. Expenses	$	4,655
Rates & Rent	$	57,360
Wages and Workcover - casual	$	19,684
Sub-total	$	630,405
Sheep enterprise expenses		
Livestock purchases	$	3,960
Animal health	$	15,077
Freight & Cartage	$	876
Sundry livestock Expenses	$	1,054
Selling Expenses	$	1,911
Levies	$	4,566
Wages	$	11,089
Workcover	$	427
Sub-total	$	38,960
Wheat enterprise expenses		
Seed	$	58,830
Levies	$	15,603
Fertiliser	$	167,904
Chemicals	$	204,803
Freight	$	100,064
Contract work	$	47,700
Insurance	$	120,193
Sub-total	$	715,097

Canola enterprise expenses		
Seed	$	5,500
Levies	$	555
Fertiliser	$	9,867
Chemicals	$	11,632
Freight	$	2,926
Contract work	$	6,325
Insurance	$	4,435
Sub-total	$	41,240
Lupin enterprise expenses		
Seed	$	40,824
Levies	$	8,625
Fertiliser	$	56,700
Chemicals	$	82,565
Freight	$	59,787
Contract work	$	-
Insurance	$	79,254
Sub-total	$	327,755
Barley enterprise expenses		
Seed	$	9,574
Levies	$	3,435
Fertiliser	$	25,872
Chemicals	$	28,688
Freight	$	20,627
Contract work	$	2,992
Insurance	$	26,620
Sub-total	$	117,808
Personal expenses		
Drawings	$	100,000
Sub-total	$	100,000
Capital expenses		
Plant Replacement	$	75,000
Property Improvements	$	40,000
Sub-total	$	115,000
Finance expenses		
Interest on Overdraft	$	139,808
Sub-total	$	139,808
TOTAL EXPENSES	**$**	**2,134,885**
Surplus/Deficit	**$**	**566,946**

Case Study B: Mixed livestock & cropping enterprise in Western Australia WITHOUT live export *cont'd*

Cashflow		
O/D opening balance	-$	2,330,128
Operating surplus	$	566,946
Add back depreciation	$	125,500
Closing balance	**-$**	**1,637,682**
Overdraft rate		6.00%
FARM BUSINESS SUMMARY		
Land Area at 30 June (ha)		4,800
Land Value $1800/ha	$	8,640,000
Sheep flock at 30 June (no.)		2,036
Sheep Value	$	110,728
Farm Business Debt	-$	1,637,682
Net asset value	$	7,113,046
OTHER FINANCIAL INDICATORS		
Equity at 30 June (%)		81.3%
EBITDA	$	832,254
EBITDA Return on Equity		11.70%
Assumptions		
WA Medium rainfall		
LAND - Ha		4,800
Total sheep no		2,691
Total Cropping hectares		3,842
DSE rating		4.85
Rainfall May - October		254 mm
Rainfall yearly		*325-450 mm*

Case Study C: Mixed cropping & sheep enterprise in Victoria WITH live export

Receipts		$
Sheep Gross Income	$	345,642
Cattle Gross Income	$	275,864
Wheat Gross Income	$	385,700
Oats Gross Income	$	28,800
Canola Gross Income	$	320,153
Sundry Income		
TOTAL INCOME	**$**	**1,356,158**

Expenses		
Overhead expenses		
Accountancy	$	7,500
Advisory Services	$	5,500
Depreciation	$	125,500
Electricity	$	18,500
Fuel, Oil, Gas	$	28,800
Insurance	$	23,200
Motor Vehicle Expenses	$	9,546
Repairs & Maintainence - Improvement	$	60,000
Repairs & Maintainence - Plant & Equip	$	15,000
Telephone	$	3,836
Travel & Accom. Expenses	$	3,655
Rates & Rent	$	23,700
Sub-total	$	324,737
Sheep enterprise expenses		
Livestock purchases	$	1,800
Animal health	$	22,358
Freight & Cartage	$	1,302
Sundry livestock Expenses	$	1,443
Selling Expenses	$	4,583
Levies	$	8,320
Wages	$	15,102
Workcover	$	367
Sub-total	$	55,274
Cattle enterprise expenses		
Livestock purchases	$	12,500
Fodder & Lick	$	35,400
Freight & Cartage	$	4,478
Animal health and NLIS tags	$	3,738
Selling expenses	$	11,035
Levy	$	280
Wages	$	-
Workcover	$	-
Sub-total	$	67,431

Wheat enterprise expenses		
Seed	$	10,545
Levies	$	4,256
Fertiliser	$	30,096
Chemicals	$	36,710
Freight	$	8,056
Contract work	$	8,550
Insurance	$	32,785
Sub-total	$	130,997
Canola enterprise expenses		
Seed	$	12,750
Levies	$	3,408
Fertiliser	$	22,874
Chemicals	$	26,965
Freight	$	6,656
Contract work	$	14,663
Insurance	$	27,213
Sub-total	$	114,528
Oats enterprise expenses		
Seed	$	848
Levies	$	302
Fertiliser	$	3,308
Chemicals	$	2,183
Freight	$	2,934
Contract work	$	383
Insurance	$	2,448
Sub-total	$	12,405
Personal expenses		
Drawings	$	100,000
Sub-total	$	100,000
Capital expenses		
Plant Replacement	$	25,000
Property Improvements	$	40,000
Sub-total	$	65,000
Finance expenses		
Interest on Overdraft	$	63,934
Sub-total	$	63,934
TOTAL EXPENSES	**$**	**934,306**
Surplus/Deficit	**$**	**421,852**

Case Study C: Mixed cropping & sheep enterprise in Victoria WITH live export *cont'd*

Cashflow		
O/D opening balance	-$	1,065,560
Operating surplus	$	421,852
Add back depreciation	$	125,500
Closing balance	**-$**	**518,208**
Overdraft rate		6.00%
FARM BUSINESS SUMMARY		
Land Area at 30 June (ha)	$	1,116
Land Value $1800/acre	$	4,962,600
Sheep flock at 30 June (no.)	$	3,115
Sheep Value	$	248,722
Cattle Herd at 30 June (no)	$	532
Cattle Value	$	471,914
Farm Business Debt	-$	518,208
Net asset value	$	4,693,114
OTHER FINANCIAL INDICATORS		
Equity at 30 June (%)		90.1%
EBITDA	$	611,285
EBITDA Return on Equity		13.03%
Assumptions		**2015**
LAND - Ha		1,116
Total sheep no		4,131
Total cattle no		485
DSE rating		12.5
Rainfall - Average 710 ml		2015 - 570 ml

Case Study C: Mixed cropping & sheep enterprise in Victoria WITHOUT live export

Receipts		$
Sheep Gross Income	$	339,723
Cattle Gross Income	$	275,864
Wheat Gross Income	$	385,700
Oats Gross Income	$	28,800
Canola Gross Income	$	320,153
Sundry Income		
TOTAL INCOME	**$**	**1,350,239**

Expenses		**2015**
Overhead expenses		
Accountancy	$	7,500
Advisory Services	$	5,500
Depreciation (*)	$	125,500
Electricity	$	18,500
Fuel, Oil, Gas	$	28,800
Insurance	$	23,200
Motor Vehicle Expenses	$	9,546
Repairs & Maintainence - Improvements	$	60,000
Repairs & Maintainence - Plant & Equip.	$	15,000
Telephone	$	3,836
Travel & Accom. Expenses	$	3,655
Rates & Rent	$	23,700
Sub-total	$	324,737
Sheep enterprise expenses		
Livestock purchases	$	1,800
Animal health	$	22,358
Freight & Cartage	$	1,302
Sundry livestock Expenses	$	1,443
Selling Expenses	$	4,336
Levies	$	8,320
Wages	$	15,102
Workcover	$	367
Sub-total	$	55,028
Cattle enterprise expenses		
Livestock purchases	$	12,500
Fodder & Lick	$	35,400
Freight & Cartage	$	4,478
Animal health and NLIS tags	$	3,738
Selling expenses	$	11,035
levy	$	280
Wages	$	-
Workcover	$	-
Sub-total	$	67,431

Wheat enterprise expenses		
Seed	$	10,545
Levies	$	4,256
Fertiliser	$	30,096
Chemicals	$	36,710
Freight	$	8,056
Contract work	$	8,550
Insurance	$	32,785
Sub-total	$	130,997
Canola enterprise expenses		
Seed	$	12,750
Levies	$	3,408
Fertiliser	$	22,874
Chemicals	$	26,965
Operations	$	-
Freight	$	6,656
Contract work	$	14,663
Insurance	$	27,213
Sub-total	$	114,528
Oats enterprise expenses		
Seed	$	848
Levies	$	302
Fertiliser	$	3,308
Operations	$	-
Freight	$	2,934
Contract work	$	383
Insurance	$	2,448
Sub-total	$	12,405
Personal expenses		
Drawings	$	100,000
Sub-total	$	100,000
Capital expenses		
Plant Replacement	$	25,000
Property Improvements	$	40,000
Sub-total	$	65,000
Finance expenses		
Interest on Overdraft	$	63,934
Sub-total	$	63,934
TOTAL EXPENSES	**$**	**934,059**
Surplus/Deficit	**$**	**416,179**

Case Study C: Mixed cropping & sheep enterprise in Victoria WITHOUT live export *cont'd*

Cashflow		
O/D opening balance	-$	1,065,560
Operating surplus	$	416,179
Add back depreciation	$	125,500
Closing balance	**-$**	**523,881**
Overdraft rate		6.00%
FARM BUSINESS SUMMARY		
Land Area at 30 June (ha)		1,116
Land Value $1800/acre	$	4,962,600
Sheep flock at 30 June (no.)		3,115
Sheep Value	$	248,714
Cattle Herd at 30 June (no)		532
Cattle Value	$	471,914
Farm Business Debt	-$	523,881
Net asset value	$	4,687,433
OTHER FINANCIAL INDICATORS		
Equity at 30 June (%)		89.9%
EBITDA	$	605,613
EBITDA Return on Equity		12.92%
Assumptions		**2015**
LAND - Ha		1,116
Total sheep no		4,131
Total cattle no		485
Total Cropping hectares		680
DSE rating		13
Rainfall - Average 710 ml		2015 - 570 ml

Case Study D: A pastoral zone sheep & goat enterprise WITH live export.

Receipts		$
Sheep Gross Income	$	317,214
Goat Gross Income	$	328,722
Sundry Income		
TOTAL INCOME	**$**	**645,936**
Expenses		
Overhead expenses		
Accountancy	$	5,000
Advisory Services	$	2,500
Depreciation	$	75,500
Electricity	$	18,500
Fuel, Oil, Gas	$	28,800
Insurance	$	23,200
Motor Vehicle Expenses	$	9,546
Repairs & Maintainence - Improvements	$	25,000
Repairs & Maintainence - Plant & Equip.	$	4,600
Telephone	$	3,236
Travel & Accom. Expenses	$	3,655
Rates & Rent	$	18,700
Sub-total	$	218,237
Sheep enterprise expenses		
Livestock purchases	$	4,400
Fodder & Lick	$	17,312
Freight & Cartage	$	7,140
Animal health	$	45,625
Selling Expenses	$	13,103
Contract Work	$	15,000
Wages		
Workcover		
Sub-total	$	102,580
Goat enterprise expenses		
Livestock purchases	$	750
Fodder & Lick		
Freight & Cartage	$	-
Sundry livestock Expenses	$	950
Selling Expenses	$	-
Contract Work	$	7,000
Wages		
Workcover		
Sub-total	$	8,700
Personal expenses		
Drawings	$	50,000
Sub-total	$	50,000

Case Study D: Pastoral zone sheep & goat enterprise WITH live export *cont'd*

Capital expenses	
Plant Replacement	$ 25,000
Property Improvements	$ 60,000
Sub-total	$ 85,000

Finance expenses	
Interest on Overdraft	$ 16,545
Sub-total	$ 16,545

TOTAL EXPENSES	**$ 481,062**

Surplus/Deficit	**$ 164,873**

Cashflow	
O/D opening balance	-$ 275,748
Operating surplus	$ 164,873
Add back depreciation	$ 75,500
Closing balance	**-$ 35,375**

Overdraft rate	6.00%

FARM BUSINESS SUMMARY	
Land Area at 30 June (ha)	25,000
Land Value $65 /acre	$ 4,013,750
Sheep flock at 30 June (no.)	6,848
Sheep Value	$ 599,453
Goat herd at 30 June (no.)	4,993
Goat value	$ 724,956
Farm Business Debt	-$ 35,375
Net asset value	$ 5,302,784.20

OTHER FINANCIAL INDICATORS	
Equity at 30 June (%)	99.3%
EBITDA	$ 256,918
EBITDA Return on Equity	4.84%

Assumptions	
LAND - Ha	25,000
Total sheep	7,054
Total goats	4,993
DSE rating	2.82
Rainfall	375 mm

Case Study D: Pastoral zone sheep & goat enterprise WITHOUT live export

Receipts	$	
Sheep Gross Income	$	317,214
Goat Gross Income	$	328,722
Sundry Income		
TOTAL INCOME	**$**	**645,936**
Expenses		
Overhead expenses		
Accountancy	$	5,000
Advisory Services	$	2,500
Depreciation	$	75,500
Electricity	$	18,500
Fuel, Oil, Gas	$	28,800
Insurance	$	23,200
Motor Vehicle Expenses	$	9,546
Repairs & Maintainence - Improvements	$	25,000
Repairs & Maintainence - Plant & Equip.	$	4,600
Telephone	$	3,236
Travel & Accom. Expenses	$	3,655
Rates & Rent	$	18,700
Sub-total	$	218,237
Sheep enterprise expenses		
Livestock purchases	$	4,400
Fodder & Lick	$	17,312
Freight & Cartage	$	7,140
Animal health	$	45,625
Selling Expenses	$	13,103
Contract Work	$	15,000
Wages		
Workcover		
Sub-total	$	102,580
Goat enterprise expenses		
Livestock purchases	$	750
Fodder & Lick		
Freight & Cartage	$	3,908
Sundry livestock Expenses	$	950
Selling Expenses	$	-
Contract Work	$	7,000
Wages		
Workcover		
Sub-total	$	12,608
Personal expenses		
Drawings	$	50,000
Sub-total	$	50,000

Case Study D: Pastoral zone sheep & goat enterprise WITHOUT live export *cont'd*

Finance expenses	
Interest on Overdraft	$ 16,545
Sub-total	$ 16,545
TOTAL EXPENSES	**$ 484,970**
Surplus/Deficit	**$ 160,966**
Cashflow	
O/D opening balance	-275748
Operating surplus	160966
Add back depreciation	75500
Closing balance	**-39282**
Overdraft rate	6.00%
FARM BUSINESS SUMMARY	
Land Area at 30 June (ha)	25,000
Land Value $65 /acre	$ 4,013,750
Sheep flock at 30 June (no.)	6,848
Sheep Value	$ 599,453
Goat herd at 30 June (no.)	4,993
Goat value	$ 724,955.75
Farm Business Debt	-$ 39,282.17
Net asset value	$ 5,298,876.70
OTHER FINANCIAL INDICATORS	
Equity at 30 June (%)	99.3%
EBITDA	$ 253,011
EBITDA Return on Equity	4.77%

Case Study E: Victorian dairy enterprise WITH live export

Income:				
Milk Sales:				
Milk Solids per Cow (kg):			532	
Total Milk Solids (kg)			95,841	
Milk Price ($/kgMS):			$5.60	
TOTAL MILK SALES				**$536,709**
Stock Sales:	*No.*	*$/hd*	*Total*	
Cull Cows:	18	$950	$17,100	
Calves:	141	$20	$2,826	
Bulls:	3	$500	$1,350	
Export Heifers	30	$1,500	$45,000	
TOTAL STOCK SALES				**$66,276**
Agistment income				$ 2,500
Enterprise Income:				**$605,485**
Enterprise expenses:				
Vet				$21,000
Certification and testing				$780
Breeding				$15,000
Calf Rearing				$6,000
Shed Costs				$19,152
Electricity				$11,321
Freight				$6,000
Fuel & Oil				$14,221
Fertiliser - Pasture				$23,504
Chemical				$2,000
Seed				$2,000
Contract crop and pasture spray/cultivate/sow				$13,000
Fertiliser - fodder crop				$1,500
Irrigation				$53,200
Purchased Feed: Wheat				$68,040
Hay/Silage Making (Contract)				$11,000
Enterprise Expenses				**$267,718**
GROSS MARGIN:				**$337,767**
Gross Margin per hectare:				$1,930
Gross Margin per kilogram of Milk Solids:				$3.52
Overhead expenses				
Accountancy				$ 7,500
Advisory Services				$ 3,500
Depreciation				$ 26,496
Insurance				$ 18,000
Motor Vehicle Expenses				$ 6,500
Repairs & Maintainence - Plant & equipment & Improvement				$ 53,229
Telephone				$ 3,200
Travel & Accom Expense				$ 1,200
Rates & Rent				$ 9,419
Wages and Workcover				$ 17,446
sub-total				$ 146,490

Case Study E – A Victorian dairy enterprise with live export *cont'd*

Personal Expenses		
Drawings	$	50,000
Sub-total	**$**	**50,000**
Capital Expenses		
Plant replacements		
Propery Improvements	$	20,000
Sub-total	**$**	**20,000**
Finance Expenses		
Interest on overdraft	$	38,686
Sub-total	**$**	**38,686**
Total Expenses	$	255,175
Surplus/Deficit	**$**	**82,592**
Cashflow		
O/D opening balance	-$	644,766
Operating surplus	$	82,592
Add back depreciation	$	26,495
Closing balance	-$	535,680
Overdraft rate		6%
Farm Business Summary		
Land Area at 30 June (ha)		175
Land value $8000/acre	$	3,456,000
Cattle herd value at 30 June	$	702,900
Farm business Debt	-$	535,680
Net Asset value	$	3,623,220
Other financial indicators		
Equity at 30 June		87%
EBITDA	$	147,773
EBITDA Return on Equity		4.08%

Case Study E: Victorian dairy enterprise WITHOUT live export

Income:					
Milk Sales:					
Milk Solids per Cow (kg):			532		
Total Milk Solids (kg)			95,841		
Milk Price ($/kgMS):			$5.60		
TOTAL MILK SALES				**$**	**536,709**
Stock Sales:	No.	$/hd	Total		
Cull Cows:	36	$950	$34,200		
Calves:	125	$20	$2,502		
Bulls:	3	$500	$1,350		
Export Heifers	0	$1,500	$0		
TOTAL STOCK SALES				**$**	**38,052**
Agistment income				$	2,500
Enterprise Income:				**$**	**574,761**
Enterprise expenses					
Veterinarian				$	21,000
Breeding				$	15,000
Calf Rearing				$	6,000
Shed Costs				$	19,152
Electricity				$	11,321
Freight				$	6,000
Fuel & Oil				$	14,221
Fertiliser - pasture				$	23,504
Chemical				$	2,000
Seed				$	2,000
Contract crop and pasture spray/cultivate/sow				$	13,000
Fertiliser - fodder crop				$	1,500
Irrigation				$	53,200
Purchased Feed: Wheat				$	68,040
Hay/Silage Making (Contract)				$	11,000
Enterprise Expenses				**$**	**266,938**
GROSS MARGIN:					**$307,823**
Gross Margin per hectare:					**$1,759**
Gross Margin per kilogram of Milk Solids:					**$3.21**
Overhead expenses					
Accountancy				$	7,500
Advisory Services				$	3,500
Depreciation				$	26,496
Insurance				$	18,000
Motor Vehicle Expenses				$	6,500
Repairs & Maintainence - Plant & equipment & Improvement				$	53,229
Telephone				$	3,200
Travel & Accom Expense				$	1,200
Rates & Rent				$	9,419
Wages and Workcover				$	17,446
sub-total				**$**	**146,490**

Case Study E: Victorian dairy enterprise WITHOUT live export *contd*

Personal Expenses		
Drawings	$	50,000
sub-total	**$**	**50,000**
Capital Expenses		
Plant replacements		
Propery Improvements	$	20,000
sub-total	**$**	**20,000**
Finance Expenses		
Interest on overdraft	$	38,686
sub-total	**$**	**38,686**
Total Expenses	**$**	**255,175**
Surplus/Deficit	**$**	**52,648**
Cashflow		
O/D opening balance	-$	644,766
Operating surplus	$	52,648
Add back depreciation	$	26,495
Closing balance	-$	565,624
Overdraft rate		6%
Farm Business Summary		
Land Area at 30 June (ha)		175
Land value $8000/acre	$	3,456,000
Cattle herd value at 30 June	$	737,100
Farm business Debt	-$	565,624
Net Asset value	$	3,627,476
Other financial indicators		
Equity at 30 June		87%
EBITDA	$	117,829
EBITDA Return on Equity		3.25%