Animal Medicines Australia

Actions in Animal Health Sustainability 2022

ANIMAL MEDICINES AUSTRALIA

The voice of the animal health industry

Animal Medicines Australia

Animal Medicines Australia (AMA) is the peak body representing the leading animal health companies in Australia.

Our members include those who develop, formulate, register and manufacture veterinary medicine products aimed at managing the health of our pets, livestock and horses.

As part of our role, AMA provides up-to-date data and information on trends to inform decision-making and policy development. This report highlights how animal health products are a critical component in achieving a sustainable future for Australians and our global community.

Boehringer Ingelheim

Elanco

Jurox
AUSTRALIA'S ANIMAL HEALTH COMPANY

MSD Animal Health

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TROY Animal Healthcare

vetoquinol
ACHIEVE MORE TOGETHER

Virbac

zoetis

A Message from the President

The animal health sector is working hard to supply essential products and services that enhance the health and sustainability of Australia's livestock and companion animal industries.

The devastating impacts of recent natural disasters as well as the COVID19 pandemic are still being felt. It has never been more important for policy makers to implement thoughtful and effective policies that protect our natural environment, our livestock production systems, and our communities that we share with our pets.

The interconnected relationship between human health and animal health within an environment that we share is complex. Understanding and embracing this relationship is critical to ensuring a sustainable and resilient future for Australia.

This report outlines the Australian animal health sector's contribution to a sustainable future.

In this report, we describe the role animal medicines play in ensuring Australians have access to safe, nutritious and affordable food, improving the health and wellbeing of the people and animals that make up our communities, and contributing to the health and biodiversity of our natural environment.

The animal health sector in Australia aims to make meaningful contributions to global efforts to three key pillars of sustainability:

- **Health:** delivering better nutrition and healthier lives, while helping reduce hunger;
- **Environment:** reducing the footprint of our operations and promoting a culture of sustainability; and
- **Communities:** working with our employees and partners to provide more sustainable livelihoods.

Understanding more about how our products contribute to achieving this vision means we can better advise governments, industry and others about the beneficial role healthy animals play in achieving local and global sustainability targets and goals.

Lance Williams, President
Animal Medicines Australia

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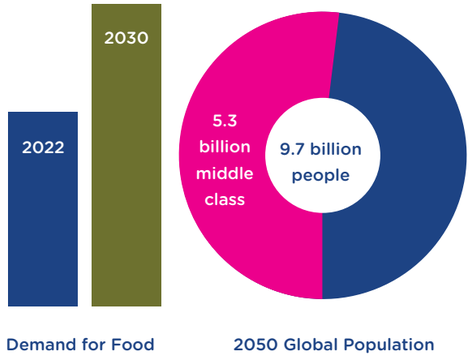
In the next 30 years, the global population is expected to increase from the current 7.7 billion to 9.7 billion in 2050, with the population in Australia and New Zealand projected to increase by 28 per cent.[1] At the same time, the global middle class is expected to expand to 5.3 billion people.



Collectively, these changes in population metrics are predicted to generate a 35 per cent increase in the demand for food by 2030[2] and a substantial increase in demand for animal protein, whether it be from meat, eggs or dairy.[3]

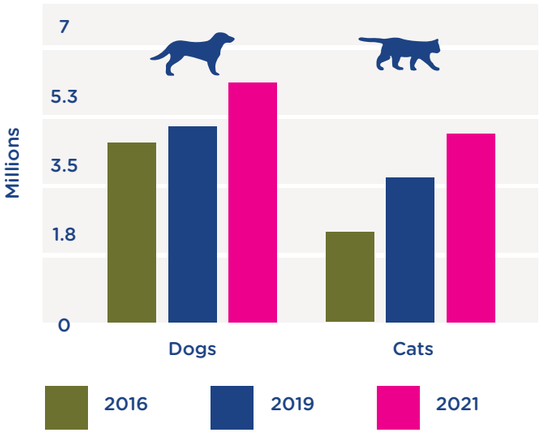
To continue to meet the growing demands for animal protein, both domestically and for our important export markets, Australian livestock farmers will be required to not only improve productivity, but also their efficiency – that is, improving productivity while simultaneously reducing their environmental impact and ensuring their operations remain economically viable.

SEC Newgate's 2022 Mood of the Nation report found that environmental and cost of living concerns are high priorities for Australians as the nation emerges from the COVID19 pandemic.[4] This research highlights the importance of the contribution made by the animal health sector in providing safe, nutritious and affordable food, while minimising any environmental impacts associated with livestock production.

At the same time, Australians are also welcoming more animals into their homes as companions.

Pet ownership is booming – with an estimated 30.4 million pets now calling home to 69 per cent of households.[5] Pet ownership has been demonstrated to contribute to improved mental wellbeing[6] and a recent survey commissioned by AMA found that 70 per cent of respondents reported that being pet owners improved their lives during the COVID-19 pandemic.[5]

As the importance of pet companions in our society grows, and the agricultural sector continues to be one of our most important economic assets, Australia's animal health industries are working to develop products, tools and systems that not only enhance the sustainability of our own businesses, but those of the industries we supply and ultimately of every consumer. Having ready access to the tools and innovative technologies necessary to keep animals healthy is key to a sustainable and resilient society.



The United Nations Sustainable Development Goals

At the United Nations (UN) Sustainable Development Summit in 2015, 193 Member States agreed on the 2030[7] Agenda for Sustainable Development, which aspires to end poverty, protect the planet and ensure that all people enjoy peace and prosperity by 2030.[8]

From the Agenda, 17 Sustainable Development Goals (SDG) were developed, addressing the three pillars of sustainability: economic, environmental and social sustainability.

The SDGs are widely supported by governments and numerous industries, including the livestock, agriculture and animal health sectors, with many issuing commitments outlining how they will contribute to achieving the SDGs by 2030.[9 10]

Australia is committed to a sustainable future

The Australian Government is committed to achieving the UN SDGs and supports the Australian agriculture sector's commitment to sustainable food and fibre production.[11]

The Australian Government's Delivering Ag2030 strategy supports the agriculture industry's goal of $100 billion in production by 2030. While this strategy is not presented as a sustainability framework, its key themes are largely consistent with the three pillars of sustainability.[12] A strong focus on environmental sustainability is clear – with ambitious targets to reach carbon neutrality, improve water use efficiency, increase adoption of renewable energy and improve production without increasing land use. The strategy also focuses on other aspects of sustainability – including people and communities, economics and risk management and innovation.

Supporting the strategy, the Agriculture Biodiversity Stewardship Package supports the adoption and improvement of sustainable on-farm land management strategies and biodiversity initiatives that benefit both farm productivity and the community.[13]

The Package comprises the Australian Agricultural Sustainability Framework (AASF), the Agriculture Biodiversity Policy, the Agriculture Stewardship Pilots and Biodiversity Certification Scheme.

The National Farmers' Federation are currently developing the AASF to outline the sustainability goals of Australia's agricultural industry to the market and to the community.[14]

Australia's livestock industries are leading the way on sustainable food production

Australia's livestock industries are committed to a range of frameworks and initiatives that prioritise the sustainability of production systems to ensure that they continue to meet community and market expectations while producing safe and nutritious food for both Australians and people around the world. [15]

Australian Dairy Sustainability Framework

The Australian Beef Sustainability Framework

Australian Pork Sustainability Framework

Sheep Sustainability Framework

Egg Industry Sustainability

Sustainable Chicken Farming

Companion animal health industries are diverse – from small independent veterinary clinics and surgeries to large pet product retailers, online stores and consumer goods manufacturers. Some examples of sustainability initiatives include:

- Vets for Climate Action Climate Care Program
- Australian Veterinary Association companion animal and environmental management policies

The Australian animal health industry's commitment to a more sustainable future

Livestock health and wellbeing is inextricably linked with the success and sustainability of Australian farms. High standards of animal health and wellbeing not only ensures the welfare of Australian livestock meets community expectations, but also translates directly into improved productivity and environmental outcomes, and reduced morbidity and mortality.

Similarly, our physical and mental health is crucial to achieving sustainable communities. The benefits of pet ownership on our health and wellbeing cannot be overlooked – as highlighted during the COVID19 pandemic. During the pandemic, pets provided companionship and comfort, as well as improving mental and physical health to millions of Australians.[5]

Australia's animal health sector is committed to a coordinated and collaborative approach to promoting sustainable food systems and communities around the world and in Australia.

Under the guidance of HealthforAnimals, the global animal health sector has identified three key areas, based on the three pillars of sustainability, that the sector can make meaningful contributions to achieving this vision.[16]

This report outlines the Australian animal health sector's contribution to a sustainable future.

Health:

Delivering better nutrition and healthier lives, while helping reduce hunger

Environment:

Reducing the footprint of our operations and promoting a culture of sustainability

Communities:

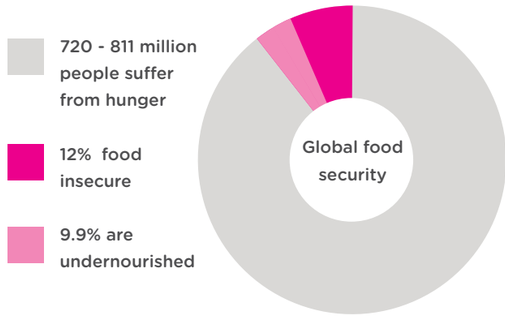
Working with our employees and partners to provide more sustainable livelihoods

Health:

Delivering better nutrition and healthier lives, while helping reduce hunger

Sustainable, healthy food

Australia produces significantly more food than we consume – with around 70 per cent of total agricultural production exported overseas.[17] Every year, each Australian farmer produces enough food for 600 people[18] and it has been estimated that, while our population sits at around 26 million, 61 million people will eat food produced in Australia.[19]



Between 720 and 811 million people worldwide suffer from hunger and around 9.9 per cent of the global population is undernourished. Almost 12 per cent of the global population, or around 928 million people, are currently severely food insecure.[20]

While there was an expectation that the COVID-19 pandemic would have devastating impacts on world hunger, the reality was even more alarming than predicted – with the number of people suffering from hunger increasing by 161 million since 2019 and 30 per cent of the global population lacking year-round access to adequate food.[20]

Without significantly bold action to accelerate progress, particularly regarding inequality in access to food, the Food and Agriculture Organization of the United Nations (FAO) considers that hunger will not be eradicated by 2030.

Micronutrients like calcium, iron, zinc and vitamin A provide the building blocks for development in our early years and resilient minds in our adulthood. In Australia, foods from livestock – milk, meat, eggs and fish – are a valuable, convenient way to get these nutrients and most of us are lucky enough to have ready access to them, as reflected in the global Sustainable Agricultural Matrix.[21] In developing regions, they are often the only way. Too many children are deprived of the chance to develop fully for want of the micronutrients readily found in a glass of milk or an egg a day.

Animal diseases are, however, a direct threat to healthy diets, making nutrient-dense food more scarce and more expensive. The World Organisation for Animal Health (WOAH) estimates that more than 20% of animal production worldwide is lost as a direct result of disease[22]

A 2012 outbreak of avian influenza in Mexico led to a shortage of eggs that drove up prices by 82 per cent, with inflated prices lasting for three years.[23] The current avian influenza outbreak has caused the price of eggs to double in the United States.[24] In November 2021, the production and supply of free-range eggs was banned in the United Kingdom under the Avian Influenza Prevention Zone (AIPZ) in an attempt to control the outbreak.[25] When avian influenza was detected in Australia in 2020, a coordinated effort by Agriculture Victoria, the poultry industry and the community helped control and eradicate the disease and avoid similar devastating impacts on food availability.[26]

A similarly coordinated effort from authorities and the Australian egg industry to manage an outbreak of *Salmonella enteritidis* in 2018 resulted in a large-scale egg recall from supermarkets across Australia and culling of birds on affected properties. The impacts for some egg producers were devastating and highlight the importance of vigilant biosecurity measures to maintain food availability and farm business sustainability.[27]

We must ensure affordability and access to food by cutting loss and waste – starting with disease control on the farm.

All of Australia's major livestock industries, including beef, dairy, pork, sheep and poultry, focus on animal health and welfare in their sustainability frameworks and targets. Vaccination is highlighted as a key preventative mechanism against the devastating impact disease outbreaks could have on the Australian livestock sector – and subsequently, the availability of safe, nutritious food for all Australians and those who rely on Australia's export markets.

The Australian Beef Sustainability Framework 2021 Annual Update[28] is testament to the high standard of animal health and wellbeing demonstrated in the Australian beef industry. These high standards, which include comprehensive disease preparedness plans and high vaccination rates, have ensured that Australia remains free from the WOAH Official Diseases.

The Australian Sheep Sustainability Framework highlights not only disease prevention and biosecurity as key to ensuring a sustainable sector, but also appropriate treatment of disease to minimise impacts on individual animals and effective traceability systems to mitigate the risk of disease spreading through Australia's sheep flock.[29]

As little as possible, as much as necessary

Even with the highest possible standards of animal health and welfare, it is inevitable that at some point in their lifetime, some animals will develop a bacterial infection and require antibiotic treatment. Animal carers have an ethical and moral responsibility to prevent illness when possible and treat sick animals when necessary.

Just as in human health, antimicrobial resistance poses a major threat to animal health, welfare and production. Infections that are resistant to antibiotics are difficult to treat and treatment options may become increasingly limited in the future as resistance develops.

Antimicrobial resistance is now a major cause of death worldwide – with an estimated 4.95 million deaths associated with AMR in 2019[30] – and presents a significant challenge that brings together researchers from human, animal and environmental health in a globally united and collaborative "One Health" approach.

Our vision is a world where veterinary antibiotics are used responsibly to protect and treat animals and maintain their value as a therapeutic tool. Equally important is the challenge of maintaining and increasing food safety and security.

To assist in meeting, these challenges, the Australian animal health sector has made a series of commitments relating to the ongoing responsible use of antimicrobials:[31]

1. Protect animal health and welfare in a united One Health approach
2. Use antibiotics judiciously and responsibly
3. Promote disease prevention and increased access to products and expertise
4. Invest in development of products for prevention and treatment
5. Increase knowledge, transparency and communication

These commitments align with *Australia's National Antimicrobial Resistance Strategy – 2020 and Beyond*, which takes a similar One Health approach to addressing antimicrobial resistance.[32]

To further assist in combating antimicrobial resistance, the animal health sector developed 25 ambitious commitments to reduce the need for antibiotics, set out in the *Roadmap to Reducing the Need for Antibiotics*.[33] As of 2021, the sector has far exceeded these commitments – delivering 50 new vaccines and 7 new products that reduce the need for antimicrobials and providing $7.3 million in research grants.[34]

In partnership with the Australian Veterinary Association, the Australian animal health sector supports the continued development of antimicrobial prescribing guidelines for livestock industries.[35] Once complete, they will complement existing guidance for companion animals and form a comprehensive suite of tools for all major animal species.

Australia has one of the most conservative approaches to the use of antimicrobials in food-producing animals in the world. Overseen by Australia's independent, science-based regulator, the Australian Pesticides and Veterinary Medicines Authority, no antimicrobials considered medically important for human health are registered for growth promotion in animals and antimicrobials considered critical for human health are prohibited for use in food-producing animals.[36]

All of Australia's major livestock industries, including beef, dairy, pork, sheep and poultry, maintain a strong focus on promoting the responsible use of antimicrobials and minimising the risk of antimicrobial resistance in their sustainability targets. The Australian cattle feedlot industry has led the world in developing stringent antimicrobial stewardship guidelines, which are now mandatory under the National Feedlot Accreditation Scheme.[37] The guidelines, developed in partnership by the Australian Lot Feeders Association (ALFA) and Meat & Livestock Australia (MLA), provide a continuous improvement framework that help lot feeders ensure appropriate use of antimicrobials.

While it is important to minimise the use of antimicrobials in animals, it would be irresponsible and unethical to withhold antimicrobials from animals that are unwell and need them. This is why it is important that we understand how antimicrobials are actually being used, rather than simply setting arbitrary targets for reducing their use in animals. The Australian Chicken Meat Federation (ACMF) is committed to not only understanding antimicrobial usage in the industry but also to understanding whether that usage is appropriate and responsible. In a world first, the ACMF developed the *Chicken Meat AM Usage Appropriateness Survey* to inform antimicrobial stewardship priorities and objectives for the sector.[38] The 2020 report indicates a very high degree of appropriateness and consideration associated with the use of antimicrobials in the chicken meat industry and highlights a number of areas for further investigation and improvement, including greater access to diagnostic tools.[39]

The risk of antimicrobial resistance developing in humans as a result of use in animals in Australia is considered low[40] and, together with New Zealand, Australia reported the lowest human AMR burden in the world in 2019.[30]

It is important, however, that efforts continue to ensure that this risk remains low and these valuable animal health tools continue to be viable and effective in the future.

Founded and led by veterinarians, the AMR Vet Collective provides a one-stop shop for antimicrobial resistance and stewardship resources, including prescribing support, guidelines, continuing education and practice resources.

The Collective's aim is to support veterinarians in understanding stewardship principles so that they can diagnose, prescribe and manage bacterial disease with confidence.

Ensuring vets have access to appropriate resources regarding antimicrobial stewardship is critical to attaining global and local sustainability and animal welfare targets.

Healthy animals and healthy people – prevention is better than a cure

Preventing diseases in animals doesn't just improve their health and wellbeing – it can also improve our own wellbeing by preventing diseases in people.

The COVID19 pandemic has highlighted just how important it is to prevent infectious diseases in both humans and animals. It is estimated that around 60 per cent of infectious diseases are zoonotic – that is, they are spread between animals and people.[41]

While improved animal health management in Australia means that it is extremely unlikely that zoonotic diseases will spread directly to people, indirect transmission does occasionally occur – for example, via insects or contaminated food. The best way to prevent zoonotic diseases spreading to humans is to prevent our animals from becoming ill.

Vaccination and other disease prevention tools like preventative parasite control medications, along with rigorous biosecurity processes and diagnostic technologies are at the forefront of zoonoses prevention.

Hendra virus is an emerging disease which was first recorded in the Brisbane suburb of Hendra in 1994 and is spread by flying foxes to horses, and in some instances from horses to people.

To date, the virus has resulted directly or indirectly in the deaths of 107 horses and infection of seven people, four of which resulted in death and one which resulted in debilitating sequelae. The disease has been reported in QLD and NSW with the most northerly infection in Port Douglas, QLD and the most southerly reported in Newcastle, NSW in 2021.

The incidence of Hendra virus infection has reduced significantly from its peak in 2011 to the present day, most likely due to the widespread use of the first vaccine ever approved to combat a BSL-4 pathogen, Equivac® HeV. This project was a textbook One-Health collaboration between an animal health vaccine manufacturer (Pfizer, now Zoetis), the CSIRO, and international partners in the USA (the Uniformed Services University and the Henry Jackson Foundation).[42]

The vaccine was first commercialised under an APVMA Minor Use Permit in November 2011 before being granted registration in August 2015. There is no recorded case of Hendra virus infection in a vaccinated horse. As of April 2022, a total of 933,000 doses of vaccine have been administered to 204,000 Australian horses.

All of Australia's major livestock industries, including beef, dairy, pork, sheep and poultry, focus on biosecurity in their sustainability frameworks and targets.

The Australian pork industry utilise a One Health approach to protecting their pigs from both local (endemic) diseases and exotic diseases. This approach highlights the importance of maintaining not just animal health, but also how animal health may impact human and environmental health. Strong biosecurity practices, including hygienic animal husbandry practices, antimicrobial resistance management and vaccination programs are key to a One Health approach to disease prevention and preparedness.[43]

The Australian Beef Sustainability Framework[44] prioritises minimising the Australian beef sector's biosecurity risk – with 91 per cent of Australian cattle properties covered by a documented biosecurity plan and high vaccination rates. Consequently, Australia remains free from all WOAH Official Diseases – including foot and mouth disease and bovine spongiform encephalitis (mad cow disease).

The 2022 outbreak of foot and mouth disease in Indonesia presents a significant risk to Australia's livestock animal health and trade. It is estimated that even a small outbreak, contained within three months, could cost around $7.1 billion, while a large outbreak (12 months) could cost as much as $16 billion. Australia's livestock sector is working closely with government to maintain Australia's strong biosecurity border program to manage FMD incursion risks but also ensure they are well-prepared to manage the disease if an incursion should occur.[45]

As a part of the *Australian Egg Industry Sustainability Framework*, Australian Eggs launched the Biosecurity VR tool – a virtual reality tool[46] that allows producers to walk through a virtual farm to identify biosecurity risks and assess the effectiveness of their own biosecurity measures, as well as identify opportunities for improvement on their own farm.

The Australian egg industry also partnered with state government organisations to develop resources for the detection and response to outbreaks of *Salmonella enteritidis* in eggs, which can cause foodborne illness when consumed.[27,47] While not endemic in Australia, outbreaks of *Salmonella enteritidis* occur periodically; most recently in 2018 and 2019. Australian Eggs' Salmonella Incidence Response Plan (SIRP) provides guidance for producers when facing an outbreak.[48] Outbreaks can be catastrophic for producers, with strict quarantine orders enforced and infected flocks destroyed.

While uncommon, people can also be directly impacted by diseases that impact companion animals, livestock and wildlife. Hydatid disease caused by the tapeworm *Echinococcos granulosus* infects dogs and dingos as the primary host, although infection of livestock and wildlife is necessary for the completion of the parasite's lifecycle. Infection can also spread to humans, causing serious disease that often requires surgery.[49] Hydatid disease is now uncommon in people in Australia – thanks in large part to readily available de-wormers containing praziquantel for dogs.[50]

Pets: our partners in good health and wellbeing

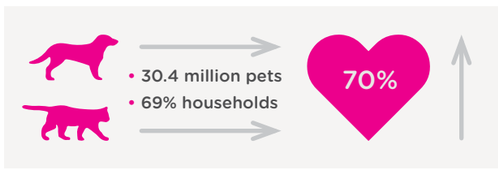
The benefits of our pets to our health are increasingly being recognised, with 97 per cent of doctors reporting the health benefits of owning a pet.[51]

The improved health of pet owners has also been shown around the world to reduce the burden on health systems, with significant associated savings in health care costs.[52,53] In Australia, these savings were estimated to be around $2 billion, with pet owners visiting the doctor 11 per cent less each year than non-owners. [54]

The benefits of optimal physical human health to a sustainable future are clear – and the importance of mental health and wellbeing in achieving a sustainable future must not be overlooked. With around 264 million people suffering from depression worldwide, it is a leading cause of disability and a major contributor to the global burden of disease.[55]

Pets and therapy animals are proven to alleviate stress, anxiety, depression, and feelings of loneliness and social isolation,[56,57] and pet ownership is associated with improved mental health in cancer survivors.[58]

Animal Medicines Australia's *Pets and the Pandemic report* exposed a boom in pet ownership during the COVID-19 pandemic, with around 30.4 million pets now residing in 69 per cent of households.[5] Companionship, comfort, positive mental and physical health and unconditional love were commonly cited as overall benefits of pet ownership and 70 per cent of respondents said that being a pet owner improved their lives during the pandemic.



Recent research demonstrates that these strong bonds between people and their pets leads to improved veterinary care – with highly bonded pet owners more likely to access preventative care such as parasiticides, vaccinations, diagnostic screening tests and teeth brushing for their pets.[59]

There is an inseparable link between the health and well-being of companion animals and that of their owners and their communities.

Recognising that link, AMRRIC (Animal Management in Remote and Rural Indigenous Communities) is dedicated to supporting the health of companion animals in remote and rural Indigenous communities.

In 2020, a deadly disease was detected for the first time in dogs in Australia. Ehrlichiosis is caused by the bacterium, *Ehrlichia canis*, and is spread between dogs by the bite of the brown dog tick. The disease has now killed up to 30% of dogs in some rural and remote communities in northern Australia.

The human toll of this disease outbreak should not be underestimated. For remote Australian Indigenous communities, dogs not only provide companionship, but are part of their cultural and kinship systems, support hunting and pest management activities and provide warmth on cold nights.

While reducing populations of ticks is important in stopping the spread of ehrlichiosis, products that repel brown dog ticks and stop them from biting are critical to protecting individual dogs from ehrlichiosis.

Elanco and Boehringer Ingelheim support the important work AMRRIC is doing to protect dogs in these communities from ehrlichiosis by providing product donations, matched employee donations, and supporting veterinary education and public awareness activities.

For information about ehrlichiosis in Australia, visit the National Pest and Disease Outbreaks website.

Photo courtesy of AMRRIC

Environment:

Reducing the footprint of our operations and promoting a culture of sustainability

Producing more from less

Feeding an increasing global population and the burgeoning middle class sustainably is an enormous challenge that cannot be solved simply by increasing the size of production systems. Healthy animals produce more meat, milk and eggs – enabling farmers to meet the increasing demand for animal protein with fewer animals. Improvements in agricultural technologies including genetics, automated farming systems, GPS devices, thermal imaging, nutrition and animal health have enabled a 20 per cent reduction in land requirements for livestock while doubling production.[10]

This, in turn, limits the need for expansion of farming land and allows the dedication of existing farmland to regeneration and biodiversity enhancement projects – with 38 per cent of dairy and livestock farmers dedicating at least some of their farmland to regrowing native vegetation.[60] *The Australian Sheep Sustainability Framework* and the *Australian Dairy Industry Sustainability Framework* highlight the importance of responsible on-farm environmental practices, including responsible management of natural resources such as water, soil and vegetation – all of which help to conserve and improve biodiversity.

Feed vs Food

Critics often argue that raising beef cattle takes up land that could be used to grow crops for human food, or that grain fed to livestock could be fed to humans. New research by Australia's CSIRO has debunked these claims:[61]

- Australian grass-fed beef production systems contribute almost 1600 times the human-edible protein they consume.
- Australian grain-fed beef production systems contribute almost twice the human-edible protein they consume.
- Grains fed to cattle in feedlots are very low in human-edible protein sources, while meeting nutritional requirements for cattle.

Healthy animals are sustainable animals

Improving animal health and husbandry, including greater use of improved technologies, offers the potential to help reduce greenhouse gas emissions from livestock by up to 30 per cent.[62] Healthy animals require less resources while every animal lost to illness and disease requires another to be raised elsewhere to meet market demand – representing emissions spent that are not subsequently converted into food.

The impact of animal disease on the environment is increasingly being documented, with the recent global outbreak of African Swine Fever serving as a sobering reminder of the cost of animal disease not just on food security and livelihoods, but also greenhouse gas emissions. While Australia has so far been spared from this devastating disease, the outbreak led to the loss of an estimated 150 million animals worldwide – representing up to 45 million tonnes of greenhouse gases invested in production that was ultimately not converted to food.[63]

Even when not fatal, poor animal health can have significant environmental impacts, with disease among cattle shown to increase greenhouse gas emissions by up to a quarter per unit of milk and more than double per beef carcass.[64]

The Australian red meat industry's Carbon Neutral by 2030 Initiative aims to proactively address the sector's emissions while maintaining livestock numbers and lead the world in sustainable food production. Since 2005, greenhouse gas emissions from the red meat industry have dropped by more than 50 per cent – the greatest reduction by any sector in Australia.[65]

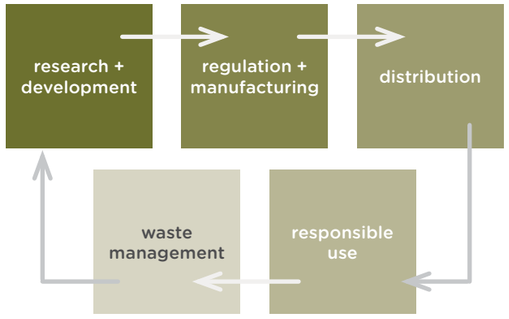
By ensuring optimum environmental, welfare and nutritional conditions, the chicken meat industry is one of the most environmentally sustainable system for land-based animal protein production.[66] Key to the success of the Australian chicken meat industry in producing highly nutritious, sustainable protein is the industry's strong commitment to ensuring optimal health and welfare, through the judicious use of animal health products such as antimicrobials, vaccinations and parasiticides.[38]

The animal health sector is committed to investing in developing preventative healthcare products for animals, including new vaccines and health supplements, to prevent disease in millions of animals worldwide and minimise the wasted emissions cost of raising them.

The animal health sector has a strong history of innovation – and an ambitious goal of a world where the threat of disease is significantly reduced due to future innovations. By improving animal immunity and disease prevention strategies and developing earlier, more specific diagnostic technologies and more accurate, effective treatments, this goal can be realised. Fewer animals lost or suffering from disease will not only improve food security and safety, but also reduce pressure on natural resources and lower emissions associated with animal production.

Improving the sustainability of animal health products

The Australian animal health sector applies sustainability as a core strategy throughout the veterinary medicine product life-cycle.



While committed to delivering new, innovative tools to improve how we monitor, prevent, diagnose and treat illness in animals to support more sustainable animal care, the animal health sector is aware that producing these tools also has an environmental impact. Our members are, therefore, equally committed to applying the same innovative mindset that enables us to tackle animal health challenges to reducing our industry's footprint – and, consequently, strengthen the long-term resiliency of our sector.

Installation of a 200kW solar panel system on the roof of their NSW production facility has provided Troy Laboratories with estimated savings of more than half a million dollars in electricity costs, while reducing the company's carbon footprint.

"The panels will offset more than 5,000 tonnes of CO2 emissions – the equivalent of taking almost 60 cars off the road permanently,"

Nic Shortis, CEO
Troy Laboratories Australia Pty Ltd.

Australia's attitudes about waste and resource management are shifting. Challenges and opportunities in waste management, waste material export, recycling and plastic pollution in the environment has led to increased public awareness and interest in waste issues.

Increasingly, consumers are making informed choices about the production, purchase and disposal of goods they consume.[67,68]

In 2021, Virbac commissioned two new industrial balers in order to be able to compact, bale and recycle the soft plastic waste from their production facility in Penrith and their distribution warehouse in Milperra.

This investment in soft plastic balers reflects the company's commitment to environmental sustainability and has facilitated the diversion of several tonnes of soft plastic from landfill to recycling per year. In doing so, Virbac successfully achieved their goal of recycling 100% of soft plastic waste on these sites by the end of 2021.

The *Australian Dairy Sustainable Packaging Roadmap to 2025* identifies a range of strategic actions for the Australian dairy industry to undertake voluntarily to contribute to the delivery of the national packaging targets and set the dairy industry's own ambitious targets relating to recycling.[69]

Developed by APCO in partnership with the dairy industry, led by Dairy Australia, the Roadmap identifies a range of voluntary strategic, collaborative actions that will contribute to delivery of the national packaging targets and outcomes.

The Australian government's commitment to waste management is also increasing. The *2018 National Waste Policy*[70] sets the Australian Government's agenda for waste reduction by 2030 and the *National Plastics Plan 2021*[71] outlines voluntary and regulatory targets for reducing plastic waste by 2030.

The Australian Packaging Covenant (the Covenant)[72], administered by the Australian Packaging Covenant Organisation (APCO), is a national regulatory framework under the *National Environment Protection (Used Packaging Materials) Measure 2011* (NEPM)[73] that sets out how governments and businesses across Australia share the responsibility for managing the environmental impacts of consumer packaging.

Product stewardship initiatives support the environmentally sound management of products and materials over their lifecycle – including the end of their useful life. Animal Medicines Australia requires our members to participate in Agsafe's *drumMUSTER* and ChemClear® industry stewardship programs.[74] These programs address environmental and health and safety concerns by disposing of, and recycling agvet chemical containers and farm chemical waste.

To date, these programs have collected and disposed of more than 39 million chemical containers and 790,500 litres of unwanted chemical, with more than 42 000 tonnes of materials diverted from landfill and recycled into re-usable products. The majority of chemicals collected by ChemClear® are used as an alternate fuel source.

For smaller volumes of unwanted or expired veterinary medicine products, the Return Unwanted Medicines Project (the RUM Project) provides a free and convenient disposal service, by providing a drop-off service via pharmacies for safe collection and disposal.[75]

Zoetis has invested in a recycling program for used applicators of TEATSEAL, in partnership with TerraCycle.

TEATSEAL is a non-antibiotic product which is infused into the teats of dairy cows either prior to the first lactation or during the 'dry' period between lactations to prevent the entry of bacteria into the udder and to therefore reduce infection of the udder or mastitis.

TEATSEAL syringes are made of Low-Density Polyethylene (LDPE) which is a recyclable packaging material. The initiative will help Australian farmers and vets recycle their empty TEATSEAL Syringes, keeping them out of landfill. The empty syringes will be collected at vet clinics, returned for processing and created into useful products such as community seating and components of playground equipment.

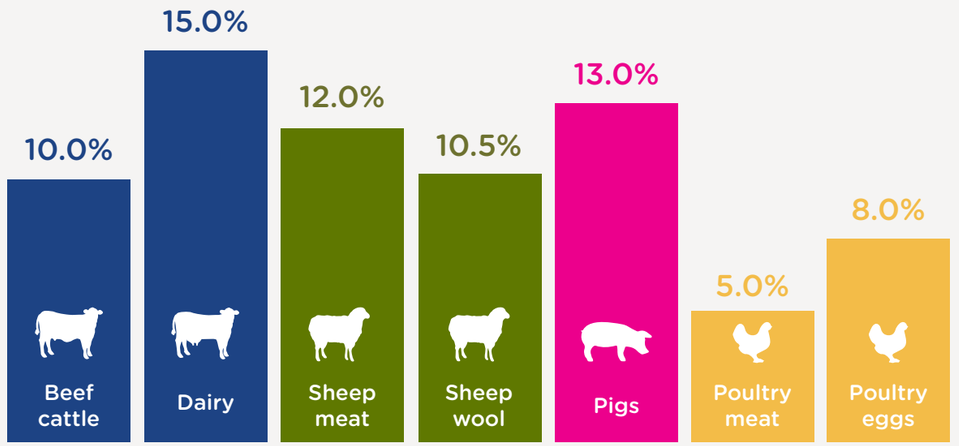
Zoetis is aiming to recycle 30% of the TEATSEAL syringes distributed within the first year of the program.

Communities:

Working with our employees and partners to provide more sustainable livelihoods.

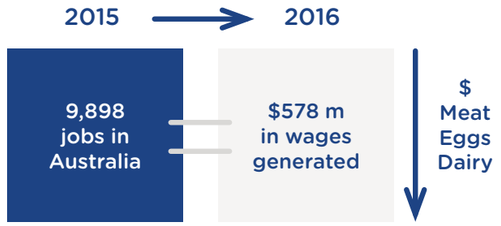
Supporting sustainable livestock production in Australia

Animal health products are responsible for 10.6 per cent of production in seven key commodity groups in Australian agriculture (beef cattle, dairy, sheep meat, wool, pork, chicken meat and eggs), contributing $2,668 million to the Australian economy.[76]



Estimated livestock production attributable to animal health products in 2015 - 2016

The use of animal health products created an additional 9,898 jobs in Australia and generated more than $578 million in wages in 2015-16. Importantly, the use of animal health products in Australia reduces the average consumption prices for meat, eggs and dairy products by approximately 12.8 per cent.



While strong biosecurity measures have kept Australia free of devastating animal diseases such as African Swine Fever, African Horse Sickness and foot-and-mouth disease, animal diseases pose a major threat to Australia's livestock, equine and poultry industries. Globally, the animal health sector invests nearly $3 billion per year in the development of new preventative, diagnostic and treatment options.

Animal disease outbreaks contribute to increased food costs – as highlighted by the current outbreak of African Swine Fever (ASF) overseas. The drop in Chinese pig production in 2019 drove a 47 per cent increase in domestic retail pork prices and, as China accounts for around 50 per cent of the global herd, even impacted global pork prices – as well as other animal-based protein foods, such as poultry and beef. [77,78,79] Australia's strong biosecurity and industry-led disease preparedness and response processes are central to keeping devastating diseases like ASF out of Australia – including developing a rapid field test for detecting ASF in neighbouring countries.[80]

In addition to the costs to consumers, animal disease outbreaks can have devastating impacts on producers. A 1999 outbreak of Newcastle Disease in Australia resulted in the slaughter of 1.9 million meat chickens and 13,000 laying hens, with a cost to farmers of around $200 million. The eradication program took 3 months and involved 5000 people – and cost the government $22 million excluding compensation. It has been estimated that environmental monitoring of the carcase disposal site will be required for at least 30 years, at a cost of $1 million per year.[81] There have been no outbreaks of Newcastle Disease in Australia since a vaccination and surveillance program was implemented in 2002.[82]

Vaccination is a key strategy for responding to Foot and Mouth Disease (FMD) outbreaks throughout South East Asia.[83] An outbreak of FMD in Australia would be devastating for the meat and wool industries, halting exports for at least six to 12 months and costing the industry up to $50 billion over ten years.[84]

In February 2022, Japanese Encephalitis Virus (JEV), a zoonotic disease spread by mosquitos that can also impact horses, was detected in piggeries across Australia. Australia's pork industry is working alongside the federal and state and territory governments to attempt to control the virus and minimise impacts on the pork and horse industries. While the overall costs associated with the outbreak are unknown, significant socioeconomic impacts are likely – including not just the significant financial losses for producers but also from the zoonotic nature of the virus, whereby people may become ill or die from contracting the virus from infected mosquitoes.[85]

The COVID-19 pandemic has highlighted the inter-connected nature of the global economy and the importance of global partnerships in achieving a more sustainable future. Emerging animal diseases are spreading more quickly because of greater global travel and trade – putting the livelihoods of farm communities around Australia at increasing risk. All livestock and pet carers must have sufficient access to all tools available for improving and maintaining animal health – including veterinary medicines.

Supporting sustainable farming and veterinary communities

Despite the important role veterinarians play in our lives by keeping our pets and livestock healthy, the veterinary industry globally and in Australia is facing a mental health crisis.

Tragically, veterinarians are up to four-times more likely than the general population to die by suicide – and twice as likely as other health professionals.[86] The Australian Veterinary Association is working to improve our understanding of the pressures placed on veterinarians and others working within the industry, as well as provide support and identify and implement solutions.[87]

In a recent survey of Australians working in the veterinary profession, 66.6 per cent reported that they have or are experiencing a mental health condition – 4.8 per cent above the national average.[88] High workloads, negative client interactions, staff shortages and a lack of work-life balance were listed as key contributing factors.

Similarly, farmers report worse mental health and wellbeing compared with non-farmers, and the suicide rate among farmers is higher than the general population.[89,90] Financial pressures, workload, isolation and a lack of accessible support services, as well as the unique pressures faced by farmers, such as drought and bushfires – which are likely to worsen as a result of climate change – are considered contributing factors to poor mental wellbeing among farmers.

The animal health industry in Australia recognises the importance of veterinarians, nurses, farmers, researchers and others who dedicate themselves to keeping our pets safe and healthy, as well as ensuring the highest standards of health and welfare for livestock.

To support the mental health challenges faced by both farmers and veterinarians, Zoetis has partnered with Beyond Blue since 2016. During this time, Zoetis has raised $600,000 by donating $5 from each sale of livestock, pig and poultry vaccines and drenches. These donations have helped over 12,500 rural Australians, including vets, receive support through Beyond Blue's counsellors.[91]

Boehringer-Ingelheim support the Australian charity Love Your Pet Love your Vet®. By raising awareness of mental health issues in the veterinary industry and building community support for veterinarians, as well as providing veterinarians with support regarding their mental wellbeing, the charity aims to highlight and address the disproportionately high rate of suicide in the veterinary profession.[92]

Supporting resilient workplaces

Providing supportive, inclusive and sustainable employment continues to be a focus for Animal Medicines Australia member companies. The responsibility our member companies have in ensuring the resilience of their employees and communities has been highlighted by the challenges Australians have faced together during the COVID-19 pandemic.

To support our staff in achieving both their career and social responsibility aspirations, our members are implementing and participating in volunteer programs, community support programs and leadership initiatives.

Virbac (Australia) offers the Virbac Volunteers Program which provides for 2 paid days per year for all staff members to provide volunteering support to local communities. With approximately 250 staff in Australia, this program provides charities and not-for-profit organisations up to 500 days of volunteer time per year and covers all sectors of society including (but not limited to) animal welfare; children, youth and elderly; environment; health; welfare and community; international aid, and education and training.

Virbac also supports the rural community sector by providing employment to locals in the small country town of Crookwell, NSW, where one of its 3 Australian production sites are located. Virbac is the second largest employer in the Crookwell township where it manufactures sheep, cattle, equine and dog pharmaceuticals. Virbac is an important part of the Crookwell economy and is proud to invest in manufacturing capabilities in rural Australia to support the resilience of Australian country towns.

Virbac

Elanco and Virbac support a scholarship through The University of Sydney for women studying agriculture and animal sciences, in memory of former colleague, Kristina Hacket.

Kristina was a member of the research team at Elanco for more than 20 years. Kristina inspired many of those working alongside her in agriculture, veterinary science and the animal health industry and was a fierce advocate for women in science. She drew enormous respect for her intellect, thoroughness and integrity and made a significant contribution to the industry through her commitment to excellence.

Kristina's efforts in bringing numerous products used in sheep, cattle, pigs, poultry and companion animals to market has benefited the health and welfare of millions of animals across Australia and around the world.

Diverse solutions are needed to solve our biggest sustainability challenges – and the empowerment of women and girls will make a crucial contribution.

Maybe a future beneficiary of the Kristina Hacket Memorial Scholarship will be able to follow in Kristina's footsteps – contributing to animal health research and helping to solve some of the world's biggest challenges.

To learn more about the Kristina Hacket Memorial Scholarship, including how to apply, visit:

https://www.sydney.edu.au/scholarships/d/the-kristina-hacket-memorial-scholarship.html

Innovation in animal health

To deliver sufficient safe and nutritious food to a growing population and providing essential care for the rapidly growing pet population, the animal health sector must continue to provide innovative solutions for reducing the spread of disease and its impacts.

The animal health sector is working towards a future where the impacts of animal disease on the environment, animal and human health and the livelihoods of Australians are greatly reduced. Scientific advances and emerging technologies are providing novel solutions for improving individual and herd immunity and disease prevention, as well as rapid, specific diagnostic processes and targeted, effective treatment options.

Ready access to and widespread adoption of these ground-breaking innovations will assist the Australian livestock industries in achieving their own sustainability goals, by reducing emissions and the use of natural resources, as well as minimising the number of animals lost to disease.

To improve both human occupational health and safety outcomes as well as hen welfare, Australian egg farmers are embracing innovative technology that enables the use of automation in vaccine delivery. This technology ensures reliable application of multiple vaccines, improved record keeping and reduces the risk of repetitive strain injury for farm staff.[94]

While innovation is key to solving many of the challenges associated with animal health and sustainable food production, it is becoming increasingly more expensive and taking longer for animal health companies to be able to bring new products to market. Globally, since the 1970s, the number of new approvals of animal health products has followed a downward trend, in stark contrast to that for human pharmaceutical products. A new product can take up to 15 years to become available for veterinarians, farmers or pet owners to treat the animals in their care. The significant costs associated with developing and registering new products mean that patent protections, data protection periods and other regulatory oversight measures must provide sufficient return on investment for innovative companies. [93]

Seven key areas for innovation for the animal health sector:[93]

1.
New types of vaccines, like mRNA vaccines, heat-resistant vaccines and 'custom' vaccines, as well as new vaccine delivery platforms for providing vaccines for large groups of animals

2.
Alternatives to antibiotics – true alternatives like bacteriophages ('bacteria eaters') or naturally produced antimicrobial peptides, as well as compounds that reduce infection risk and reduce the need for antibiotics

3.
Digital technologies to enable individual-level care for large groups of animals via sensors, tags and collars, and facilitate earlier diagnosis and more specific treatment using real-time animal health monitoring and disease

4.
Accurate and timely diagnostics that reduce the severity of animal disease by facilitating early, appropriate treatment

5.
New methods of parasite control that facilitate better management of resistance, like mRNA parasite vaccines, 'green' parasiticides that break down quickly and oral parasiticides

6.
Nutritional advances to improve immunity and gut health such as probiotics, phytogenic feed additives and novel supplements like seaweed can minimise the likelihood of an animal getting sick and requiring treatments, while minimising environmental impacts

7.
Innovative new methods are being used to demonstrate the safety and efficacy of new animal health products before they are able to be used – including *in-vitro* testing, stem cell technology and biomarkers

A Call to Action

Australia's animal health sector is committed to the global effort to achieve a more sustainable future. Representing more than 90 per cent of the sector in Australia, Animal Medicines Australia's members develop and manufacture products that help our farmers and our vets prevent, diagnose and treat animal diseases, including vaccines, parasiticides and antibiotics.

We recognise that the global vision of a more sustainable future cannot be achieved by one sector alone – the UN's aspiration to ensure a better and more sustainable future for all will only be achieved through coordinated, collaborative action.

By harnessing our expertise and collaborative networks, our products are helping Australian farmers, vets and pet owners realise this vision – from reducing both our own emissions and assisting farmers reduce theirs, to ensuring their businesses remain viable and providing high quality, safe, nutritious food to Australians and people around the world.

With less than a decade to deliver the UN SDGs, as well as the triple threat of climate change, hunger and pandemic recovery, business as usual is not enough. In Australia, animal health and welfare is held at a high standard and, coupled with Australia's strong biosecurity activities, these standards have enabled Australia to be free of the major global epidemic diseases of livestock. The continued loss of one in every five animals to disease worldwide, however, is not sustainable to the positive contribution of agriculture in tackling these global challenges and it is imperative for Australia to maintain and improve its high standards of animal health, welfare and biosecurity.

Improving animal health is the foundation for more sustainable future food systems.

Australian farmers and veterinarians are already charting the course towards greater sustainability but need more support.

Developing policies, partnerships and technologies that improve animal health will contribute to improved sustainability outcomes for Australia's agricultural sector, as well as a society that is increasingly welcoming pets into their households. Increasing the availability of veterinary services and supporting farmers to adopt best practices can allow animal agriculture to meet the nutritional needs of a growing population while reducing our environmental footprint.

Supporting innovation in the animal health sector to ensure veterinarians, farmers and pet owners have access to the most appropriate and effective animal health products will enable many of the challenges associated with achieving a more sustainable future to be met. Bringing new products to market has never been more challenging – but it is necessary if we are to achieve a more sustainable future.

Australia's animal health sector is committed to championing this global movement by continuing to build upon our actions, collaborate with others and support our farmers, veterinarians and pet owners in achieving their own sustainability goals.

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