‘Owning’ the value chain: Agriculture in the Asian century

Donald McGauchie AO
Chairman, Australian Agricultural Company (AACo)

In 2013 Australian agriculture was primed to reap the opportunities that would be provided by what was becoming known as the Asian century. It was at that time however, comparable to the Australia that Donald Horne described in The Lucky Country in 1964, an industry that was lucky despite itself.

While agriculture can’t be accused of being lazy in quite the same fashion that Donald Horne portrayed, there were a number of factors that gave cause for concern about the sector’s ability to grasp the opportunities that were being presented to it. A lack of policy direction in agriculture and a sense of complacency that was a hangover from the mining construction boom meant that the unique opportunity that the Asian century presented to redirect Australia’s growth engines and capture a new boom in agriculture was potentially being lost.

Agriculture was at risk of missing the boom unless there was national reform in the following key areas:
- skills and labour costs
- infrastructure and energy costs
- market access
- foreign investment
- research and development
- leadership.

New thinking about agriculture
Over the last four years the Asian middle class has continued to explode in size and Australian agricultural exports have outpaced our competitors in supplying this market, but this has occurred without many of the national policy reforms called for in 2013 and outlined above.

This article will address each of the points raised as areas of deficiency in 2013 in answering two vital questions about the direction of Australian agriculture:

- Why is Australian agriculture doing well despite a lack of policy reform?
- What does this tell us about the future of Australian agriculture in the Asian century?

The Asian century

In 2009 Asia’s booming middle class numbered 500 million. In 2015 the number of middle-class consumers had grown to 1.4 billion and is forecast to reach 3.2 billion by 2030. According to the Brookings Institution the global middle class will grow by 1 billion people over the next seven years and 88% of this growth will occur in Asia. By 2020 the value of China’s middle-class consumption will overtake the United States (US), India’s middle-class consumption will overtake Japan, and Indonesia will enter the top 10 for the first time.

The impact of this growth in middle-class consumption is already being felt in Australia. Between 2012 and 2016 the value of Australian agricultural exports to Asia increased 24%, from $22.9 billion to $28.5 billion. Over the same period agricultural exports to China have increased by 33%.

Since 2010, the value of total Australian agricultural production has grown at an average 7% each year, up from just 4% per year between 2000 and 2009. Four years ago, the general goal was to double agricultural production between 2010 and 2050 with more optimistic forecasts looking to double production in 20 years (by 2030).

Four-year report card

In 2013 the concern was that if the Asian century was a race, Australian agriculture had missed the starter’s gun and been left behind by countries such as the US, Brazil, Malaysia and Indonesia. Since then, the value of US agricultural exports to Asia has declined by 6%, Malaysian and Indonesian agricultural exports to Asia have gone backwards, and only Brazil appears to have continued growing this market.

Australia’s record of 24% growth over the same period indicates that clearly something has shifted in our relationship to the region over the last four years yet, for the most part, we have not seen significant national policy reform in agriculture in that time. Rather than policy reform what has occurred is individual businesses driving massive change. Understanding these changes that businesses have made is the key to understanding how Australian agriculture will capture the opportunity of the Asian century.

Skills and labour costs

In 2013 there was a desperate need for more skilled young people on the land. At that time, the median age for Australian farmers was 53, in 2017 it has increased to 56. In 2013 labour costs were prohibitively high and they remain high today. If anything, the labour system is less flexible as the impact to changes to 457 and other visas remains to be seen.

Despite the lack of national reform to address these issues, businesses have responded with their own solutions. At AACo the overall focus has been on higher quality product and higher value customers. In parallel, AACo has addressed skills and labour costs by investing in people and production systems to achieve quality and by sourcing labour offshore as it is needed.

Technology has been critical in achieving quality and lowering labour costs. AACo’s breeding programs utilise data technology to achieve unprecedented levels of quality. Lamb meat processing is already highly automated and beef will follow, allowing significant labour efficiencies to be realised.

At AgQuip this year, the first generation of robotic tractors and sprayers was on display. Horticulture harvesting and sorting technology will transform labour requirements over the next decade.

At the same time, we have found strong interest among young people wanting to work in agriculture. AACo has formed a partnership with Marcus Oldham College to teach young leaders how to manage quality production systems. This program includes teaching an understanding of robotics and big data. Targeted training programs like the one with Marcus Oldham are crucial strategic initiatives that guarantee access to leaders with appropriate training in the future.
There also continues to be real pressure on basic skilled labour – such as diesel mechanics in remote areas. In response to this AACo has integrated skilled technicians from the Philippines. In Victoria, similar workers are meeting demand in piggeries and feedlots. Despite the lack of policy reform in skills and labour costs, businesses that have done well have:

- maximised returns for their product by focusing on quality
- reduced labour costs through technology and international labour
- have driven targeted training partnerships as required.

**Infrastructure and energy**

In 2013, infrastructure bottlenecks and energy costs were major problems for Australian agriculture. Since then most government infrastructure investment has been on urban commuters.

At GrainCorp, poor rail infrastructure impacted the handling of last year’s record grain harvest. Higher cost road transport instead had to be used to transfer grain to the ports.

Energy costs are forcing Nufarm to review elements of local operations and manufacturing.

Despite this, industry has responded:

- GrainCorp has designed and secured a partnership with the Victorian and NSW governments to upgrade rail handling facilities.
- The Wagner family has invested their own money in Australia’s first new airport in 40 years at Toowoomba.
- The Australian Wool Testing Authority facility in Perth, has invested its own money to move to solar power generation.
- AACo is running its Darwin abattoir at Livingstone on electricity from its own gas-powered plant. It is also working with LandBridge, the owners of the Port of Darwin, to expand refrigerated container capacity as it is needed.

There has also been massive private investment in new global infrastructure. This includes social media, e-commerce and logistics. Today a customer in Chengdu can watch a short video on WeChat, they can then click on an Alibaba link and purchase the product from the video as they watch, and they can then have it delivered to their door. A New Zealand farmer is using this infrastructure to sell apples to Chinese customers, in batches of two, and at substantially higher prices.

Australian entrepreneurs are already building whole businesses off these new value chain elements. They are not waiting for national policy reform.

**Market access**

In 2013 new markets were needed for Australian agricultural products. Since then, free trade agreements with Japan, Korea and China have been secured. There are however, still many technical details to resolve, before full access is granted through these agreements.

For example, AACo’s Livingstone facility does not yet have a license to deliver processed meat into China, and the horticulture sector is still working through bio-security and other technical trade restrictions. In the meantime, again, industry is getting on with the job.

AACo has partnered with Joe Lewis’s Tavistock group and launched the super premium ‘Wylarah’, and premium ‘Westholme’ beef lines into Singapore and Taiwan. AACo has connected with high-end restaurants and retail and have started marketing ‘the Art of Australian Beef.’

Every part of AACo’s domestic value chain has been realigned to service these brands and to connect high-end middle-class consumers with the story and history of the product. This strategy is working. Since the launch in Singapore last year volume has grown by 11% and the average sale price has increased by 28%. It is early days in Taiwan, but the signs are also good. AACo will move these brands into more cities in Asia, the Middle East, Europe and the US in the future.

On market access, the message is simple, government can open the way but businesses must do the heavy lifting. Businesses must tightly control the quality and supply of their product and must connect directly with the customers who will meet the cost of quality.

In practice, this means assembling unique value chains, aligning owned value chain components, aligning non-owned components through partnerships and always maintaining a precise understanding of the product and customers.

**Foreign investment**

In 2013 the parochial nature of Australian attitudes towards foreign investment was leading to outcomes like the collapse of ADM’s acquisition of GrainCorp. Yet AACo, Australia’s oldest company, began as a wholly owned corporation in the United Kingdom.
AACo’s full-value-chain push into high-end consumer beef markets in Asia, the Middle East, Europe and the US, at scale, is an Australian first. It is only possible because of the partnership with Tavistock, who are a 45% shareholder in AACo. The Tavistock network is being leveraged for distribution partnerships including high-end restaurants, some of which are owned by Tavistock. Tavistock’s expertise, capacity, scale, connections and financial investment in AACo is essential to the success of this Australian first endeavour.

Foreign investment will continue to drive growth in Australian agricultural exports, but it must be through genuine partnership. Effective partnerships can leverage each party’s skills and result in building value chains which connect high-quality product to high-value customers.

Research and development

Since 2013 there has not been a significant increase in public investment in research and development (R&D). As a result, R&D in Australian agriculture continues to be underinvested from public funding.

Bill Ferris and Alan Finkel recently reported on innovation in Australia. They noted that Australia is good at creating new knowledge and our businesses and consumers are great at adopting innovations brought to market overseas. But the gap – for Australia – is in applying new knowledge and bringing it to market ourselves.

Again, despite the lack of reform, businesses have been getting on with the job.

Nufarm is partnering with CSIRO to incorporate the Omega 3 gene into Canola seeds. Nufarm knows their customers and is aligning the value chain to service them. They have led a targeted partnership with CSIRO to apply new knowledge for the market.

AACo has established an Innovation Group and Scientific Advisory Board chaired by Dr Megan Clarke, former Chief Executive of CSIRO. Together they are applying advances in breeding genetics to produce quality beef at scale. The exploration of innovative technology is being recognised globally. Microsoft founder, Bill Gates, visited AACo earlier this year and after the visit made these comments:

“I was impressed by how high-tech the whole process was. AACo relies on cutting edge genomics to breed Wagyu beef cows, some of the most elite cattle in the world.”

GrainCorp is preparing for a market shift toward highly specialised, high-value small-batch grain development. It is investing in the container facilities required and is learning more about the customer it will be servicing. This knowledge will justify R&D investment in the product. In 20 years, GrainCorp, which is currently a commodity business, may well generate the majority of its returns from specialised small-batch product. This is a trend which is already being observed with barley malt products in North America and Scotland.

These examples show that where there is a value chain connecting new knowledge to customers, it is being facilitated by industry investing in effective R&D partnerships. Without that level of precision, a national solution to the R&D gap may be much harder to find.

Leadership

The final point of concern limiting the development of Australian agriculture from 2013 was a lack of effective leadership. Australia is not complacent about this deficit anymore. The end of the mining boom has been recognised, however leadership to bring on long-term system reform so that other sectors of the economy can take up the burden has not emerged. Board rooms and C-suites do not yet have an answer to the leadership problem.

From the examples described in this article however, it has been shown that perfect decision-making in Canberra is not required in order to capture Asia’s growth. Businesses are putting their heads down and getting on with it.

So what does this mean for Australian agriculture in the Asian century?

Effective national policy reform has not yet been achieved in skills and labour costs, infrastructure and energy costs, foreign investment, research and development or policy leadership. Australia has secured improved market access, however the technical details to enable trade under these agreements are still being resolved.

Yet, despite all of this, Australian agriculture is capturing the Asian boom.
It is happening through innovative targeted responses by individual businesses. In 2013 Donald Horne’s description of Australia was fairly accurate. Perhaps not lazy, but certainly lucky, complacent and lacking direction. Today, Paul Kelly’s *The End of Certainty* better explains the story of Australian agriculture. In that book Kelly describes the unwinding of Australia’s industrial settlement in the 1980s and 90s. Today the traditional silos of our old production systems and value chains are gone. They have been dissolved around the world – in part by the explosion of new markets in Asia and new technology. In the 1980s and 90s, the old certainty was suffocating Australian agriculture.

In exchange, there is now an uncertain world, but one which is full of potential value, hidden in Asia’s growth. The task for Australian agriculture is to capture the value in this uncertainty by connecting the right product, to the right customer, through the right bespoke value chain.

AACo has invested over a billion dollars in recalibrating production systems and today produces the highest quality beef, at scale, 12 months of the year. In partnership with Tavistock, the company can market and deliver product directly to customers that want quality and will pay for it. In partnership with Marcus Oldham, the company is training the next generation of farm and business leaders. Partnerships with the Port of Darwin are growing capacity in infrastructure and by taking responsibility for the value chain the company has the precision to ensure quality product from paddock to plate.

Nufarm is improving quality and minimising costs because of knowledge about its value chain. It is sourcing processed base materials offshore to avoid local energy costs and working with CSIRO to bring new knowledge to market through targeted partnerships. Investment in applied innovation is being captured because the value chain allows it to.

GrainCorp continues to improve bulk and premium product value chains. The company is investing in facilities that allows it to handle small-batch high-value grains. GrainCorp will now invest and partner in applying new knowledge to bring these grains to market – because there is the confidence that the value chain will deliver to customers. Partnerships have also been formed with state governments to improve the rail infrastructure that is needed.

In 2013 national policy reform was desperately needed to capture the Asian century. This is still important. Bad decisions will continue to hurt agriculture in this country.

However, the old, siloed, stable value chains have dissolved – and with them, many of the old policy reform levers have gone too. In fact, it may be that just as *The End of Certainty* has made policy reform more difficult, it might just have made national leadership less important too.

Good policy should always be pushed for, however the real insight from the last four years, is that *The End of Certainty* is providing enormous opportunities, as long as Australian agriculture focuses on premium product. So long as new, high-value customers are found and connected with wherever they are.

The examples provided in this article show that the opportunity the Asian century presents can be captured, but each business must find and assemble their own value chains, through targeted investment, alignment and partnerships guided by a precise understanding of products and customers. This, more than anything else, has driven and will continue to drive Australia’s agricultural boom in the Asian century.

If Australian agriculture continues down this path, it will be well on the way to the goal of feeding 100 million wealthy people in the region and creating an economic boom that agriculture can be proud of.

In an uncertain world of exciting opportunity, this is the New Horizon.

**Donald McGauchie** is Chairman of Nufarm Limited, Chairman of the Australian Agricultural Company Ltd (AACo), Chairman of the Australian Wool Testing Authority (AWTA), and a Director of GrainCorp Limited. His previous roles with public companies include Chairman of Telstra Corporation Limited, Deputy Chairman of Ridley Corporation Limited, Director of National Foods Limited, Chairman of Woolstock, Chairman of the Victorian Rural Finance Corporation (statutory corporation), and also President of the National Farmers’ Federation. During 2011 he retired as a member of the Reserve Bank Board. In 2001, Donald was named the Rabobank Agribusiness Leader of the Year, and was later awarded the Centenary Medal for services to Australian society through agriculture and business. In 2004, Donald was appointed an Officer of the Order of Australia.
Risk in Australian agriculture

Risk is a fundamental feature of Australian farming and agribusiness, yet in many respects risk management systems in Australian agriculture are much less developed than is the case in other nations. New research to be conducted by the Australian Farm Institute (AFI) will have the ultimate aim of identifying potential initiatives that may facilitate improved risk management options for Australian agricultural businesses.

Generally, the risk faced by agricultural businesses can be separated into three broad components, these being:

- **Production risk:** risk associated with the production system on-farm, including climate, disease, inappropriate management etc.
- **Market risk:** risk derived from fluctuations in the market value of farm produce – including due to supply and demand and the exchange rate.
- **Institutional risk:** risk associated with changes external to either production or market factors, such as government policy changes, trade restrictions etc.

Australian agricultural production is subject to one of the most variable climates in the world. As an indication of this variability, ABARES has forecast production for the 2017 national wheat crop of 21.6 million tonnes. This figure is 38% lower than the record crop of 35 million tonnes experienced in 2016, even though the area sown to wheat has been relatively stable (ABARES 2017).

Market risk is also a major factor for Australian farm businesses due to the complete exposure to international markets of much of Australia’s agricultural commodity production. Australia is one of the least regulated agricultural economies in the world – meaning that there are few, if any, government supported mechanisms for insulating Australian agriculture from international price movements.

With almost two-thirds of Australian agricultural production being exported, trade agreements which provide access and certainty to export markets are critical for lowering risk for farm businesses. Policy changes can have significant and unforeseen impacts on trade, as was experienced during the live export ban of 2011.

Historically, national and state governments in Australia assisted farmers to manage risk by maintaining a variety of different farm assistance measures to supplement farmers’ incomes during periods of “exceptional circumstances.” This included access to cheap finance and the waiving of a range of different state government charges, as well as the provision of family welfare measures and farm business support in the form of grants and interest rate subsidies. These measures were triggered with increasing frequency over the period from 1980 to 2010.

A series of reviews commencing in 2010 eventually resulted in an inter-governmental agreement on drought policy in 2013. This replaced existing drought measures with an easier-to-access farm family welfare support measure, but essentially removed farm business support measures such as interest rate subsidies.

Part of the rationale for removing these risk management measures was that government supported programs (and earlier statutory marketing arrangements) ‘crowded out’ the development of commercial agricultural risk management options in Australia. It was anticipated that one of the outcomes of the dismantling of drought policy would be the development of some of these instruments, that are more commonly traded and utilised as part of risk management strategies by farmers in overseas locations. To date there is little evidence that the development and widespread use of commercial risk management products has occurred as anticipated.

The AFI research will be investigating commercial risk management products that are more widely used overseas. Farmers in the United States and Canada for instance, have a number of different commercial products available that can be used to manage risk. These include commodity derivatives (options and futures), forward contracts and specific insurance products (such as multi-peril crop insurance). These are utilised either directly by farmers, or by marketing intermediaries who use these as wholesale instruments to underpin ‘retail’ marketing and risk management options commercially provided for their farmer clients.

An in-depth understanding of these products will allow an assessment of their applicability on a commodity-by-commodity basis as might be applied against the risks that Australian farmers face. The research will also involve analysis of risk management gaps, and consideration of potential industry or government actions that might be required to overcome those gaps.

**Reference**

Strong public R&D systems grow private-sector R&D investment

In an era when government funding of agricultural research and development (R&D) is declining in real terms (especially at the state government level) the role of the private sector in funding agricultural R&D is, by definition, becoming more important. A recently completed research project carried out by the Australian Farm Institute aimed to examine ways to encourage increased private-sector investment in agricultural R&D in Australia.

The study included extensive interviews with leaders of some of the largest agribusiness organisations in Australia and internationally, a survey of private-sector agricultural R&D managers in Australia, and an extensive review of Australian and international literature.

One of the first points to emerge from the research was that there is growing evidence from both the literature and from the interviews conducted for this research that relatively strong public-sector investment in agricultural R&D is an important factor in encouraging private-sector investment.

This is somewhat contrary to the recommendations of the Productivity Commission, which conducted a review of Australia’s agricultural R&D system in 2011. It recommended halving the level of Australian Government investment in agricultural R&D, on the basis that public investment was ‘crowding out’ investment by the private sector, and reducing government investment would result in compensatory growth in private-sector investment.

However, international evidence is that nations that have maintained a relatively strong public agricultural R&D system are also the ones that have a strong and growing private-sector agricultural R&D sector. The two sectors tend to be complementary, in that the public sector focuses more basic research and issues which have a substantial ‘public good’ element, while the private sector tends to focus on applied research and commercial development. The public sector also plays an important role in maintaining R&D capacity via the development of personnel and the management of research infrastructure (laboratories and field stations) which attract private-sector commissioned research.

The importance of Australia maintaining strong public-sector agricultural R&D investment is further reinforced by developments that have been occurring in agribusiness at the global scale. The ever-increasing regulatory cost of progressing new chemicals and technologies from discovery to commercialisation is part of the reason for the major consolidation that has occurred in the global agrochemical sector in recent years. However, as the Australian R&D managers of these organisations explained, this means the R&D agendas of these organisations are driven by opportunities in global markets, rather than by opportunities that might be much more specific to Australian agriculture.

The risk for Australian agriculture is that in the absence of a strong public agricultural R&D system (and the ability to use this to leverage private-sector investment in areas of importance to Australian agriculture) the flow of innovation of particular relevance to Australian farmers and agribusiness will shrink to a trickle, slowing productivity growth and reducing the sector’s international competitiveness.

An important issue to emerge from the interviews with private-sector R&D managers was the difficulties they experience arising from the culture that prevails amongst many university researchers in Australia. A number of the interviewees commented that Australian researchers tend to not have any commercial experience, and therefore often have a poor understanding of the effort required to convert new discoveries into commercial products. As a result, they have unrealistic expectations about the outcomes of collaborations, and some universities can also be very slow and unresponsive when it comes to negotiating commercial arrangements.

That said, private-sector R&D managers were generally very complimentary about the capabilities of individual Australian researchers, and considered this to be an important factor that encouraged them to increase the level of investment they make in Australia.

A further issue raised by many research managers was the difficulties they face in obtaining information about research that is currently being undertaken, and identifying the public-sector expertise relevant to their particular research interests. The lack of a comprehensive national database of research being undertaken and research expertise acts as a disincentive for the private sector, but also seems likely to increase the risk of unnecessary duplication in the Australian system.

Ultimately, the private sector will continue to be more prominent in agricultural R&D in Australia, but that does not mean the public sector is no longer important. Better access to information about the R&D activities of both sectors seems likely to improve the complementarity of the two systems, as does a stronger focus by universities and other public-sector institutions on measures to facilitate collaboration with the private sector.
Australian agriculture’s role in future greenhouse emission reduction policies

Q1. Given the significant contribution that agriculture has already and is currently making to emission reduction in Australia, what type of policies do you believe should be adopted in the future to encourage emission abatement by businesses in the agriculture sector?

The Hon Mark Butler MP
Shadow Minister for Climate Change and Energy
Federal Member for Port Adelaide

Australia’s agricultural sector is helping Australia to meet its emissions reduction targets while improving productivity and delivering broader environmental benefits.

The Australian Government’s $2.55 billion Emission Reductions Fund is providing incentives for Australian farmers and landholders to adopt new practices and technologies to reduce Australia’s greenhouse gas emissions.

Across the five auctions held to date, 435 projects have been contracted to deliver more than 180 million tonnes CO2-e of emissions reductions, at an average price of $11.83 per tonne.

Eighty-one per cent of this total will be delivered by projects established on farmland. The Australian Farm Institute has estimated some $300 million per year of revenue will be earned by these farm based projects.

The results of the Fund demonstrate the key role the farm sector can play in helping Australia achieve its greenhouse emission reduction targets.

More than $300 million remains in the Fund for future projects, with a sixth auction scheduled for 6–7 December 2017.

The Hon Josh Frydenberg MP
Minister for the Environment and Energy
Federal Member for Kooyong

Land managers and farmers are contributing to emissions reduction in a number of ways, including adopting new practices to store carbon in trees and the soil, avoiding greenhouse gas emissions by not clearing land and actively managing savanna fires across northern Australia.

Several government programs and policies are supporting farmers to reduce their emissions and adapt to the changing climate.

For example, through the Fund, the Bulgo Station Native Forest Project in south Cobar, western New South Wales is delivering over 650,000 tonnes of abatement. The project will provide long-term protection of 7000 hectares of native forest on marginal land on Bulgo Station. The project manages the risk of bushfires and feral goats in these forests while continuing to graze sheep during dry times.

The Clean Energy Finance Corporation (CEFC) provides opportunities for agricultural businesses to reduce emissions and operating costs through finance to invest in energy efficient equipment and renewable energy upgrades. As at September 2017, the CEFC has made $553 million of total commitments to the agribusiness sector. Of this, $149 million was applied directly to major projects worth $361.4 million. A further $404.5 million of CEFC finance will be taken up by the agriculture sector in aggregation programs, which support smaller projects or clean energy vehicles in agribusiness.

The Government is also helping boost farm profits at the farm gate and deliver climate change action. The Government recently provided $5.5 million to the Rural R&D for Profit program to help explore how new legume varieties can increase soil fertility, reduce weeds, diseases and fertiliser use.

The Hon Josh Frydenberg MP
Minister for the Environment and Energy
Federal Member for Kooyong

The Hon Mark Butler MP
Shadow Minister for Climate Change and Energy
Federal Member for Port Adelaide

The land sector has played a great part in abating carbon pollution, but its potential is much greater than has been realised.

Labor has always been a great supporter of climate action by farmers and other landholders. That’s why we established the Carbon Farming Initiative, which not only cuts carbon pollution, but also provides a valuable source of income for project proponents.

Labor remains committed to the carbon farming initiative and to ensuring it becomes a sustainable part of our suite of policies to tackle climate change.

The Hon Josh Frydenberg MP
Minister for the Environment and Energy
Federal Member for Kooyong

The Fund is supporting land managers and farmers to reduce greenhouse gas emissions and improve the environment.
Q2. What lessons do you believe have been learnt as a result of the Emission Reductions Fund process, and how should these be incorporated into future emission abatement policies relevant to the agriculture sector?

The Hon Mark Butler MP

Labor has always said putting the entire cost of cutting carbon pollution on the taxpayer is neither an efficient nor a fair way to cut our emissions more broadly. Labor subscribes to the broad principle that the polluter should pay to lower pollution that is harmful to society as a whole. Only by applying this principle, and allowing carbon farming offsets to play their part, can a long-term sustainable future for carbon farming be created.

The Hon Josh Frydenberg MP

The Fund is successfully supporting low-cost abatement opportunities across Australia, including in the agriculture sector. For example, vegetation activities are providing new income to farmers and land managers by integrating with existing agricultural activities such as grazing.

The Fund is delivering other benefits on top of reducing emissions. For example:

- improving native vegetation on agriculture land is reducing run-off and improving water quality in key catchments, including the Great Barrier Reef
- farm productivity is improving and the Fund is providing an additional income stream for farmers and land managers
- savanna fire management projects in northern Australia are providing cultural, environmental and economic opportunities for Indigenous Australians.

The Fund is providing world-class standards for reporting, verification and measurement of emissions reductions. The Australian Government is engaging with the agriculture sector to learn about ideas and opportunities for reducing emissions.

Further, the Government is reviewing its climate change policies during 2017 to ensure they remain effective in achieving Australia’s 2030 emissions reduction target and Paris Agreement commitments. The review is examining the opportunities and challenges of reducing emissions on a sector by sector basis, including for the agriculture sector.

Q3. Given current challenges associated with energy security and affordability and the likely impact that responses will have on Australia’s greenhouse emission inventory, it seems likely that emission reductions achieved by the agriculture sector will become more critical in the future in order for Australia to meet future emission commitments. Do you agree with this, or are there other options that would better position Australia to meet its future emission commitments?

The Hon Mark Butler MP

Land sector carbon abatement will play a central role in Australia’s transition to a clean energy economy. Our potential land sector abatement is one of our huge advantages in a low carbon economy, and we would be incredibly foolish to not use this great asset.

The Hon Josh Frydenberg MP

The agriculture sector will continue to play a critical role in helping to meet Australia’s future emissions commitments.

Across sectors, the Government is investing, through the Australian Renewable Energy Agency and the CEFC, in generating more energy from renewable sources, increasing energy efficiency, and supporting the switch to low-emission fuels.

The CEFC is working with the Australian Government Department of Agriculture and Water Resources to support sustainable agricultural practices that increase energy efficiency and provide greater profitability and productivity for the agricultural and agribusiness sectors.

Artificial meat will soon replace natural meat in the human diet, signalling humankind’s profound switch to a more humane and environmentally friendly diet, and allowing massive areas of the earth’s surface to be rewilded to solve humanity’s greenhouse emission challenges, according to George Monbiot, a prominent opinion writer for The Guardian newspaper in the UK. There are so many misleading statements and selected ‘facts’ in Monbiot’s article, it’s difficult to know where to start. It’s not even clear from the article which type of artificial meat Monbiot is talking about. There are two different types and these are cultured meat, which is grown in a laboratory using stem cells from cows and foetal calf blood serum, and synthetic meat, made from a mixture of plant extracts, chemicals and vitamin additives.

Of the two, cultured meat remains at the laboratory stage, and despite being heavily hyped and promoted as solving the world’s environmental problems, is yet to be scaled up to commercial production. In fact, in recent times there have been articles questioning the potential environmental credentials of cultured meat, with one suggestion that by the time all the inputs and fermentation technology is accounted for, the greenhouse footprint of cultured meats may not be that different from conventional meat. It has also been pointed out that a reliance of foetal calf serum as a growing medium is somewhat problematic and defeats the whole purpose of the effort, although the proponents insist they will be able to use genetically modified yeasts as a substitute in the future, once the process is refined.

Artificial meat, essentially made from plant matter, is being championed by companies such as Impossible Foods, and their products are currently available in premium hamburger outlets in the United States. According to the company website, ingredients of artificial meat patties include: Water, Textured Wheat Protein, Coconut Oil, Potato Protein, Natural Flavours, 2% or less of: Leghemooglobin (Soy), Yeast Extract, Salt, Soy Protein Isolate, Konjac Gum, Xanthan Gum, Vitamin C, Thiamine (Vitamin B1), Zinc, Niacin, Vitamin B6, Riboflavin (Vitamin B2), Vitamin B12.

As some have pointed out, natural meat does not require all these additives because they are already included, and enthusiastic consumers of these products may be surprised at the amount of extracts of genetically modified crops they include. A key feature of Impossible Foods’ hamburger patties is a form of artificial ‘blood’ – heme – which is produced using a genetically engineered yeast, and is claimed to give the patties their meat-like taste.

The major ‘claimed’ advantages of artificial meats are a large reduction in the area of land used to produce human food, and also a big reduction in greenhouse gas emissions. As an example, Monbiot makes the claim: Almost all forms of animal farming cause environmental damage, but none more so than keeping them outdoors. The reason is inefficiency. Grazing is not just slightly inefficient; it is stupendously wasteful. Roughly twice as much of the world’s surface is used for grazing as for growing crops, yet animals fed entirely on pasture produce just 1 gram out of the 81 grams of protein consumed per person per day.

Of course, anyone with even a modicum of knowledge of agriculture would quickly point out that grazing animals are almost universally confined to land that is unsuited for cropping because it is too poor, too steep, too rocky, part of a cropping rotation, or in an area that is climatically unsuited. Therefore, the comparison that Monbiot makes about the ‘efficiency’ of use of farming land by grazing animals and crops is completely nonsensical, because the land being compared is fundamentally different.

The question of the greenhouse emission footprint of grazing livestock is also an interesting one. Various claims are made about the significance of emissions from grazing livestock, but what is poorly understood is that to some extent the international greenhouse accounting system used to estimate livestock emissions creates a misleading picture. The accounting system estimates gross emissions from livestock, without netting out the carbon dioxide that has been sequestered in the plant matter consumed by grazing animals.

This creates the perception that removing the livestock will stop any greenhouse emissions arising from that land. This may be the case in high rainfall and fertile areas where revegetation on that land would act as a carbon sink, but the vast majority of the world’s grazed livestock do not live on high-rainfall fertile farmland, but on savannas and rangelands. In these regions, if livestock are removed and the extra carbon that is sequestered as vegetation builds up is subsequently emitted into the atmosphere again due to more frequent and uncontrolled bushfires (as frequently occurs in most rangeland and savannah regions) then the actual greenhouse emission advantage due to the removal of grazing livestock will be much less than it might seem to an uninformed opinion writer.

Underlying much of the enthusiasm for artificial meats seems to be the belief that all forms of livestock farming are inherently cruel, and artificial meats are a way of still enjoying the taste of meat, without the cruelty. Interestingly, though, Monbiont’s suggestion is that areas currently used for livestock farming be ‘rewilded’ – presumably by reintroducing native fauna including predators. The result would be that the grazing animals in these areas would experience disease and predation, resulting in much crueler deaths than ever experienced by domestic animals. Whether this represents a reduction in animal cruelty is an interesting moral question.

Ultimately, people are free to eat what they like, and if they prefer a vegetarian diet or lab grown or artificial meat rather than natural meat, then they are free to make that choice. However, they should not make that choice based on the misleading and distorted information promoted by opinion writers like Monbiot.
EU decision on glyphosate postponed, again

European Union (EU) officials have, again, postponed the decision on reauthorising use of glyphosate, after a vote by the European Parliament in favour of phasing out the controversial herbicide by 2022. The chemical’s current EU license expires on 15 December.

The European Parliament passed a nonbinding resolution to ban glyphosate on 24 October. A committee of the European Commission had planned to vote on 25 October on the proposed renewal of the chemical’s license for 10 years, but after the Parliament vote, the Commission dropped the proposal.

EU officials failed to get enough votes to reauthorise glyphosate in June 2016, when the Commission proposed renewing it for 15 years. The Commission extended the license for 18 months while regulators evaluated glyphosate’s safety. Since then, the European Chemicals Agency and the European Food Safety Authority have declared no evidence links glyphosate to cancer or reproductive effects.

However, EU member nations have yet to reach consensus on an appropriate length of time for glyphosate’s reauthorisation. The Commission is now trying for an agreement in the five- to seven-year range. Farm groups and pesticide makers are urging EU officials to reauthorise the use of glyphosate for 15 years, the full term for a pesticide. “Without renewal, our affordable food supplies and agricultural conservation will be thrown into jeopardy,” says Pekka Pesonen, Secretary General of Copa and Cogeca. EU officials are expected to discuss the reauthorisation again at the next committee meeting on 6 November.

Impossible Burger GMO

Impossible Foods have created a plant-based burger designed to be extremely beeflike. While you might expect the Impossible Burger to be championed by animal rights activists, Impossible Foods have fallen foul of the activist group Friends of the Earth.

Soy leghemoglobin, or SLH, the key ingredient that makes the Impossible Burger so meaty, is created using genetically modified yeast. “This is a protein produced with genetic engineering; it’s a new food ingredient,” said Dana Perls, senior food and technology campaigner at Friends of the Earth. The case of Impossible Burger raises concerns that implicates the extreme genetic engineering field of synthetic biology, particularly the new high-tech investor trend of “vat-itarian” foods.

World’s smallest wine vintage since 1961

The Paris-based International Organisation of Vine and Wine (OIV) predicts the global 2017 vintage to be the lowest since 1961. It is estimated to slump 8.2% – equivalent to about 3 billion less bottles – to 246.7 million hectoliters. Italy accounts for half of the drop in global wine volume, with the country’s 2017 vintage predicted to slump 23%. French output may fall 19%, and Spanish production is expected to drop 15%. “The main reason is the freeze that affected the vineyards of western Europe,” said Jean-Marie Aurand, OIV’s Director General.

Australia is the world’s fifth-biggest wine producer, with 2017 vintage estimates 6% higher than last year. Argentina’s production is predicted to rebound 25%, based on the OIV’s estimates.

Bird flu mutation increases human threat

Genetic analysis of H7N9 viruses obtained from Chinese poultry from 2013 to 2017 identified new mutations that make the virus more lethal in chickens and may pose a greater threat to human health, based on virulence and transmissibility tests in animal models. Researchers from China reported their findings in *Cell Research* (24 October).

The researchers said the mutations have already been detected in humans in China, and with the threat to poultry and humans, the findings underscore the need for control steps to curb the spread of the virus. The authors warned that culling alone will not solve the problem, because the widely circulating low-pathogenic virus can mutate to a highly pathogenic form at any time.
In the news

The Institute’s knowledge of agtech and farm data featured in two recent articles. The first article ‘Technology and data revolution challenges the role of farm advisers’, by Neil Lyon in Grain Central (27 September 2017), quotes Mick Keogh, AFI’s Executive Director:

The agricultural sector in Australia was experiencing major changes as a consequence of global forces that were disrupting many established business models, including the farm advisory sector.

We are facing a situation where ‘disruption’ is going to rapidly occur in agriculture, driven by the digital and data revolution. That is the future that is in front of us.

Different models have emerged and evolved and I think it is unclear at the moment who will emerge as the ‘captain’. Who is going to be the ‘captain’ of some of these systems as they evolve in agriculture...

Don’t ignore this. If the industry doesn’t engage and start thinking about some of these issues we may well end up captive on a ‘railway’ that has a predetermined destination.

The second article ‘The Agtech: What the umbrella term really means’, by Alex Sampson in The Weekly Times (10 August 2017), discusses the obstacle to Australian uptake of agtech presented by difficulties for those in remote regions connecting to the internet.

The Australian Farm Institute, a body increasingly wading through the agtech pool, says it’s about ‘connecting things that have been around for some time’...

‘It’s about things like yield monitors, spray monitors – that we already have – and using the data they produce more efficiently and for a wider range of purposes,’ says AFI General Manager Research Richard Heath.

Heath says the principle behind digital agriculture, ‘which is combining data for more insight’, has been used by innovative farmers for some time, but it has been complex, difficult, and farmers had to have a lot of aptitude in data collection.

‘What is going to happen now is that those mass market products and solutions are going to take it beyond that 1% into more of the technology that everyone can engage with really quickly and adopt,’ Heath says.

Out and about

Recently the Institute’s Executive Director, Mick Keogh, has spoken at:

- Growing SA 2017 Conference, Hahndorf, South Australia
- Marcus Oldham College Strategic Management Workshop, Sydney
- Murray Dairy Business Forum, Shepparton, Victoria
- Syngenta Growth Awards judging panellist.

Richard Heath, the Institute’s General Manager Research, has spoken at:

- Grower Group Alliance 2017 National Grower Group Summit, Perth
- The University of Sydney ‘Growing the Business of Agriculture’ Symposium, Sydney.