



Perspectives on growing agriculture to a \$100 billion industry by 2030

A submission to the Standing Committee on Agriculture and Water Resources from the Australian Farm Institute

Overview

The business of agriculture in Australia has historically been beset with risk. While production practices are constantly improving, the challenges of climate change, energy prices, poor data collection, inadequate digital adoption and immaturity of the risk management product market are eroding growth.

Significant competition to Australian agricultural exports continues to increase, climate change threatens stability of production and emerging institutional risks combined with a lack of community trust in some agricultural practices are causing disruptive change.

Since the wool boom ended, a single identity and universal purpose for Australian agriculture have been absent. While the agriculture sector is now much more diverse, that diversity has resulted in fragmentation and duplication of effort in promotion, public spending and advocacy. Adoption of a unifying goal – such as the aspiration to reach a target of gross value of production (GVP) of \$100 billion (B) by 2030 – could help mobilise the agricultural industry to address these challenges and resource appropriate solutions.

A unifying goal could mobilise the industry.

The rate of growth

Despite the lack of a coordinated purpose, the value of the sector to the economy has continued to grow, with the value of Australia's total agricultural output now double what it was in 2000. However, the vast proportion of the increase in farmgate value has been through price growth rather than an expansion of agricultural activity¹.

In 2017/18 the GVP of Australian agriculture² was \$65B, meaning that to reach a target of \$100B GVP by 2030 the sector's financial value will need to grow at an annual average rate of approximately 3.7% each year from the 2017/18 level (Figure 1).

The long-term trends of production and prices which dictate this value are stochastic in nature. Australian agriculture experiences many ups and downs³ (Figure 2) but has robust long-term average growth despite prolonged and widespread droughts. The sector has exhibited average growth of 3.6% per annum over the past 30 years, 4% p/a over the past 20 years and 4.8% p/a in the past decade, against the projected average gross domestic product (GDP) growth rate of 2.6%.

¹ Heath (2019). [From sheep's back to moonshot: meeting the 2030 targets](#), *Farm Institute Insights*

² Including fisheries and forestry

³ The annual variation observed in the value of fisheries and forestry output is considerably less than that observed for the farm sector.

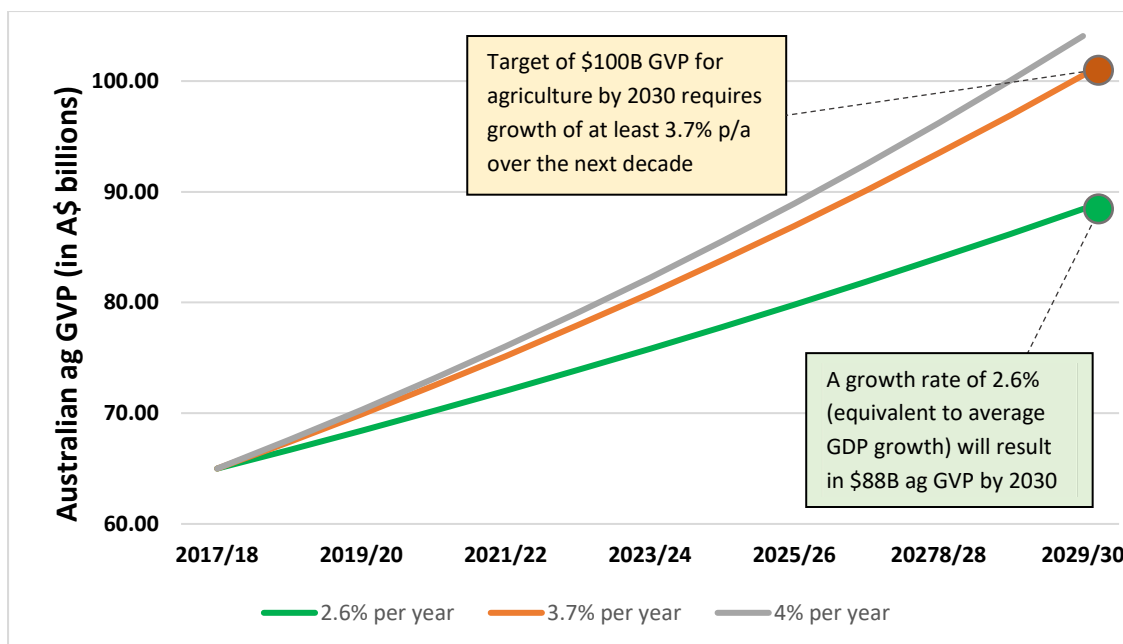


Figure 1: Projected Australian agricultural GVP in 2030 with hypothetical growth rates

Source: Authors' simulation

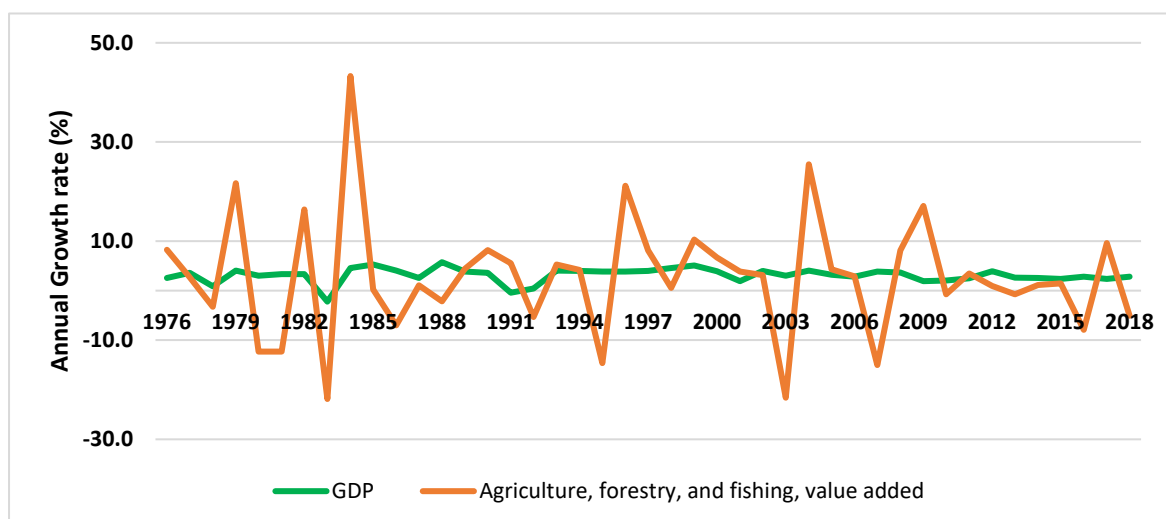


Figure 2: Historical growth rate of Australia's agriculture sector and GDP

Source: World Bank

A goal to increase GVP is often focused on increasing the amount produced. However, this productivist⁴ approach faces notable barriers and constraints in Australian agricultural systems, particularly related to the **ongoing degradation of natural capital** and increased competition for resources.

In general, agricultural GVP growth is influenced by productivity growth and the market price conditions or a combination of both. Forecast global and domestic population growth provides strong signals that demand for Australian agricultural produce will rise,⁵ however this demand will be met partly by the

⁴ 'Productivism' describes an intensive agricultural system which is based on the expansion of world trade in food, ever-increasing farm sizes, and the use of technology to increase output.

⁵ The Australian population is growing at 1.4% per annum, assuring a steadily expanding domestic market.

rapid expansion of agricultural output occurring in eastern Europe, South America and Asia. **It is naïve to assume that Australian agriculture will be guaranteed a meaningful share of these opportunities.**⁶

Despite the challenges posed to achieving a growth rate of 3.7% p/a for the next decade, there is considerable merit in setting an aspirational goal. Like the ‘moonshot’ of 1961, such a goal can provide a focal point for the broad array of initiatives required to achieve it. However, to be a specific, measurable, achievable, realistic, and timely (SMART) goal, the different subsectors of agriculture require **sector-specific goals** and strategies which in combination will aim for the \$100B target.

Opportunities

Adoption of digital technology

The development and adoption of technology in agriculture can significantly enhance productivity growth from the farm throughout the supply chain. The AFI’s economic analysis for the P2D project⁷ showed that the **full adoption of digital agriculture could yield an additional \$20.3B to the gross value of the Australian agricultural industry** (based on 2014-15 GVP levels).

Adoption of digital agriculture could add \$20.3B to GVP.

This estimate was achieved through modelling the potential productivity gains arising from the application of digital agriculture. All sectors achieved GVP gains in the analysis, with the largest cross-sector gains estimated in labour, genetics, input efficiencies, market access and biosecurity (Figure 3).



Figure 3: Estimated potential GVP impact of digital agriculture adoption
Source: Australian Farm Institute

To construct this modelling, it was assumed that analysis of data acquired by digital agriculture will enable better decision-making and changed practice, leading to more efficient and higher value agricultural production. Although there are several barriers to overcome before digital agriculture can be fully adopted (i.e. connectivity and digital literacy constraints), the size of this opportunity suggests that implementation measures should be pursued vigorously.

Valuing natural capital

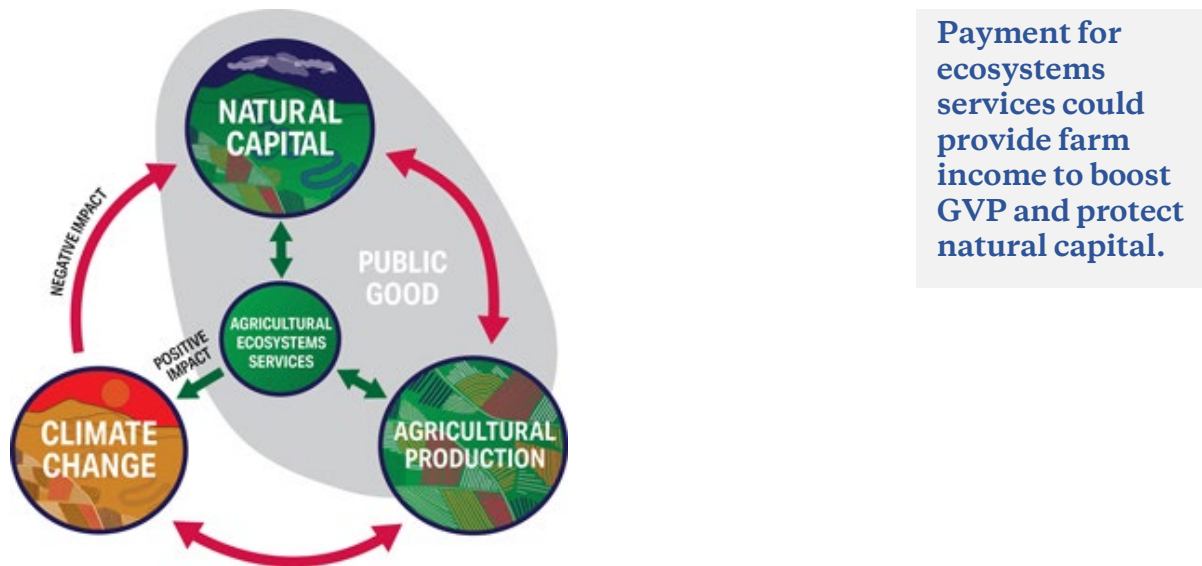
Although food and fibre production have at times negatively impacted biodiversity, water quality and soil conservation, considered management of farmlands can improve natural capital via the provision of multiple ecosystem services (Figure 4). However, without a developed market for ecosystems services,

⁶ Australia’s market share of regional agricultural imports has been declining over the past decade in all major global regions except for North Asia.

⁷ Perrett et al., (2017), *Accelerating precision agriculture to decision agriculture – analysis of the economic benefit and strategies for delivery of digital agriculture in Australia*. Research Report, Australian Farm Institute.

the value of this allied agricultural activity is often considered ‘free’ and performed voluntarily at the personal expense of farmers or enabled via government subsidies.

The development of a payment for agricultural ecosystem services model could not only incentivise and accelerate regeneration of natural capital to future-proof production, but also contribute financial capital to Australian agricultural GVP by adding an income stream to primary production.



Payment for ecosystems services could provide farm income to boost GVP and protect natural capital.

Figure 4: The interrelationship of ecosystems services and agriculture
Source: Australian Farm Institute

Impediments

Climate change

Climate change is a ‘wicked problem’ representing not only a threat to the Australian agricultural sector’s profitability and international competitiveness but also to our long-term food security and the viability of some regional communities.

The AFI report *Change in the Air*⁸ highlighted significant existing and future threats to agriculture, which is more vulnerable to climate impacts than other economic sectors. For example:

- Queensland and Northern Territory beef production is predicted to decline 19% by 2030 and 33% by 2050 due to climate change impacts.⁹
- A CSIRO simulation results of 50 grain zone sites showed that water-limited yield potential of wheat declined by 27% over a 26-year period from 1990 to 2015.¹⁰

⁸ McRobert et al., (2019). *Change in the air: defining the need for an Australian agricultural climate change strategy*. Research Report, Australian Farm Institute.

⁹ AMPC (2016), *Strategic risks facing the Australian red meat industry*.

¹⁰ Hochman, Z., Gobbett, D., & Horan, H. (2017). Climate trends account for stalled wheat yields in Australia since 1990. *Global Change Biology*, 23, 2071–2081.

- Frost-related production risk has increased by as much as 30% across much of the Australian wheatbelt over the past two decades in response to an increase in later frost events.¹¹
- Heat stress reduces milk yield by 10-30% - up to 40% in extreme heatwave conditions¹² - and predicted temperature increases is likely to prompt further relocation or industry exits in the Australian dairy industry.

Urgent action on climate change is needed to arrest negative impacts in agriculture.

Although the effects and magnitude of impacts of climate change on each agricultural subsector differ, the overall impact is undoubtedly negative and a barrier to improving the sector's combined value growth rate.

A nationally coordinated policy approach could help address the common issues and build sector-wide resilience. Without **transformative, systemic change to adapt and mitigate to climate change**, it is unlikely that Australian agriculture will achieve or sustain the required growth to reach the \$100B target.

Increased risks

The threat of new and emerging institutional risk factors is quickly becoming a major concern for the agricultural industry.¹³ **Community trust issues**, including animal welfare and potential glyphosate regulation, have created substantial uncertainty and increased risk for agricultural producers which could disrupt the aim to increase the collective value of the industry to \$100B in the next decade.

AFI research determined that farm business management which strengthens financial resilience and delivers the capability to absorb production, market and institutional shocks is the most effective way to address multiple risks. Industry bodies and advocacy groups should proactively develop effective responses to emerging sources of institutional risk, and work to **improve financial literacy** and increase awareness of risk management tools.

In addition, the Australian market for risk management tools such as weather derivatives and multi-peril crop insurance is still notably immature and **poor data collection is a barrier to best-practice risk assessment and management**. Government and industry must collaborate to address such issues to ensure these increased risks do not further impede agriculture's growth potential.

Incomplete data

There is an urgent need to **improve the collection, analysis and timely provision of agricultural statistics** by taking innovative, cooperative action to improve the way this information is gathered and distributed. Failure to do so will compound the existing problem of decisions and policy made in the absence of solid evidence, as noted in the risk research.

The AFI report, *Reinventing Australian statistics*,¹⁴ makes several recommendations for improvement, such as **utilisation of common frameworks and education programs**. The Australian agricultural statistics system can be reinvented if a common purpose of contributing data for the general benefit of the sector is embraced and pursued cooperatively by industry and official agencies within an agreed framework.

¹¹ Crimp, S. J., Zheng, B., Khimashia, N., Gobbett, D. L., Chapman, S., Howden, M., & Nicholls, N. (2016). Recent changes in southern Australian frost occurrence: Implications for wheat production risk. *Crop and Pasture Science*, 67(8), 801.

¹² Hull, L. (2016). *Dairy's (Climate) Changing Future*.

¹³ Laurie et al., (2019), *Australian agriculture: an increasingly risky business*, Research Report, Australian Farm Institute.

¹⁴ McRobert et al., (2019), *Reinventing Australian agricultural statistics*, Research Report, Australian Farm Institute.

Without complete, timely and accurate data, the sector will struggle to accurately identify obstacles and opportunities in achieving the desired growth rate. Progress assessment and performance measurement of industry initiatives targeted at the \$100B goal will also be difficult.

Energy costs

Rising costs and increased usage of energy (for example, through adoption of energy-intensive technology on-farm and intensified production) are having a significant financial impact on the industry and present another constraint to GVP growth.

In a 2018 research report¹⁵, the AFI calculated the relative impact of energy costs on agriculture and found that **pre-processing energy costs were equal to 9% of the GVP of the sectors evaluated**. Energy costs were a higher proportion of GVP in energy-intensive sectors such as sugar (16%) and dairy (13%) and less in extensive sectors such as beef (7%) and sheep (6%).

Pre-processing energy costs make up 9% of agricultural GVP.

Australian farm businesses have been becoming more energy efficient for some time, however recent price rises have outstripped the sector's ability to match price rises with efficiency gains. The future growth rate of the sector's GVP is heavily dependent on the **proportionate cost of energy**.

Conclusion

A focused purpose for Australian agriculture such as the \$100B GVP target could galvanise the sector to address impediments to growth and capitalise on opportunities, provided action is taken on these key points:

Key points

- Individual opportunities and impediments **relevant to each subsector** must be identified.
- **Improved adoption of digital technology** across Australian agriculture is an imperative.
- The feasibility of **payments to farmers for ecosystem services** should be investigated.
- A **national strategy for climate change and agriculture** should be urgently adopted to help Australian agriculture adapt to and mitigate urgent challenges.
- Priority should be given to managing **emerging and increasing risks** which could impede growth.
- **Lack of data is hindering good decision-making** in the sector - the reinvention of Australian agricultural statistics is long overdue.
- **Rising energy costs** in agriculture are a serious impediment to improving profitability and maintaining viability.



ABOUT AFI: The [Australian Farm Institute](#) has conducted public policy research into issues which directly impact agriculture and sought solutions that maximise the profitability and sustainability of rural Australia for 15 years. In this time, the AFI has published more than 50 issues of the Farm Policy Journal and more than 40 research reports, as well as quarterly newsletters and discussion papers on a wide range of policy issues. The AFI also disseminates knowledge by organising conferences, seminars and roundtables.

This submission was prepared by R Heath, K McRobert, S Admassu and T Fox in October 2019 for the Standing Committee on Agriculture and Water Resources inquiry into growing Australian agriculture to \$100 billion by 2030.

¹⁵ Heath et al., (2018), *The impacts of energy costs on the Australian agriculture sector*, Research Report, Australian Farm Institute.