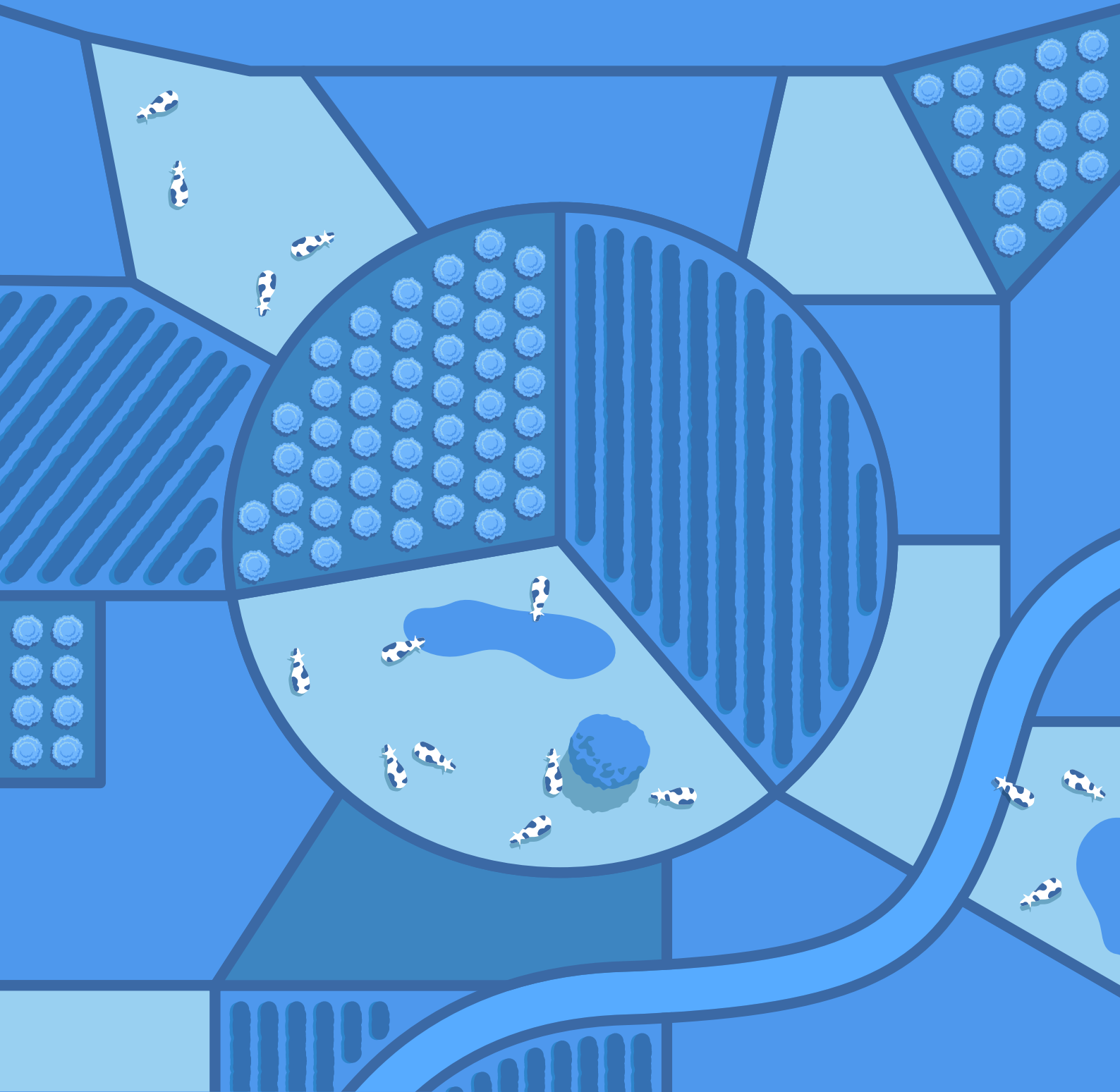


Blueprint Institute

Cultivating resilience

Advancing sustainable agriculture in Australia



Contents

- 1 Executive summary**
- 4 The environmental impacts of the agricultural sector**
 - 4 The emissions problem**
 - 6 Water woes**
 - 7 Biodiversity under threat**
- 8 The economic necessity of sustainable innovation**
- 9 Greening the pastures**
- 11 Tough terrain to cultivate change**
 - 11 More mouths to feed**
 - 11 Measurement and data challenges**
 - 12 Complexity at scale**
 - 12 Value chain dynamics**
 - 15 Land rich, cash poor**
 - 15 Status quo bias**
 - 16 Poorly designed regulation**
 - 16 Misaligned incentives**
 - 17 Greenwashing**
- 18 Recommendations**
 - 18 Set clear and ambitious intentions**
 - 19 Build Australia's environmental information capability**
 - 22 Recalibrate incentives for adopting sustainable practices**
 - 25 Boost investment to the development of sustainable farming practices**

About Blueprint Institute

Every great achievement starts with a blueprint.

Blueprint Institute is an independent public policy think tank. The challenges our nation faces go beyond partisan politics. We have a once-in-a-generation opportunity to rethink and recast Australia to be more balanced, prosperous, resilient, and sustainable. We design blueprints for practical action to move Australia in the right direction.

For more information on the institute please visit our website: blueprintinstitute.org.au

Acknowledgements

Thank you to the experts who have contributed through consultation and peer review in the development of this work.

Images are courtesy of Unsplash.

Attribution

This report may be cited as: Downey, L., Williams, L., Lubberink, J., Poulton, C., Black, S., Cultivating resilience: advancing sustainable agriculture in Australia, Blueprint Institute, 2025.

All material published or otherwise created by Blueprint Institute is licensed under a Creative Commons Attribution.

About the authors

Liana Downey

Liana's career has focused on improving citizen outcomes through the use of evidence-based policy in the areas of climate/energy, housing, and education. Liana has worked in the corporate, government and social sectors. Previous policy roles include Deputy Secretary, NSW Education, special advisor to the Department Prime Minister and Cabinet, leader of McKinsey sustainability and public sector practices, and lecturer in public policy at New York University's Wagner School of Public Policy. Liana is a GAICD, and holds an MBA (Arjay Miller Scholar) with a focus on public policy from Stanford University, a Bachelor of Science (Maths), and a Bachelor of Asian Studies.

Lauren Williams

Lauren holds a Bachelor of Science with Honors in Psychology and later obtained a Master's degree in International Development and Public Health from the University of Sheffield. Lauren has undertaken collaborative research efforts on social policy issues across Nepal, South Sudan and London, working on a wide range of social policy and development issues.

Jae Lubberink

Jae's research focuses on economics, tax, public policy, climate-tech, and housing. He holds a Bachelor (Hons) in Politics, Philosophy and Economics from the University of Queensland.

Claire Poulton

Claire's research focuses on social polarisation and media, and her prior experience includes work in digital communications and marketing. Claire holds a Masters in International Relations from the University of Sydney, and a Bachelor of Communications and Media studies from the University of Wollongong.

Sophie Black

Sophie's research focuses on complex system change and evidence-based policy and development. Sophie holds a Masters (Hons) in International Relations from the University of St Andrews and a Graduate Diploma of Law from the University of Law in London.

Executive summary

From the tropical north to our windswept south, Australia's agricultural sector is a cornerstone of our national identity. Our farmers feed our country, keep supermarket shelves stocked, support the vitality of our regional and rural centres, and make essential contributions to the Australian economy.

Australia's vibrant agricultural sector has made us one of the most food secure nations in the world. Only 10 percent of the food we consume is imported and what we export contributes a staggering \$94.3 billion to Australia's GDP.¹

Farmers already well know how closely their businesses and livelihoods are intertwined with the health of the land. While agricultural production relies on natural assets and ecological systems to yield healthy crops and livestock, many conventional farming practices contribute to the degradation of the very ecosystems essential to a productive farm.

Agricultural activities are currently a leading cause of native animal habitat and biodiversity decline, accounting for 16.8% of net greenhouse gas emissions, 74% of national water consumption and 55% of land use.

The urgency of implementing robust sustainability measures, for the sake of our planet and the Australian economy, is paramount.

Future generations of Australian farmers—their children, and their children's children—depend on these measures being implemented. Enhancing operational sustainability will not only boost the agricultural sector's economic resilience, competitiveness, and long-term viability, but will also conserve our country's invaluable natural resources, and ensure the legacies of Australian farming families live on.

With 70% of Australian agricultural products exported to neighbouring countries and beyond, our food systems need to align with rising global standards to secure ongoing market access and economic prosperity. As trade regulations on products linked to land clearing and biodiversity

loss are progressively being imposed in the European Union, the United States, and other countries, Australia's need to adapt is apparent.

Driving leadership in agricultural sustainability and boosting the resilience of Australian agriculture now, and into the future, requires **intention, information, incentives, and investment.**

Intention

Until now, much of the ambition for sustainable practices has been driven by producers—particularly family-owned businesses who want to ensure the productivity of their land for generations to come.

As the global dynamics shift, it is time for the Australian Government to set more ambitious climate targets at a national level and to harmonise sustainability trajectories across the agricultural sector.

Information

Australia lacks an accurate, reliable and comprehensive foundation of environmental data—the very key to understanding the state of our land and the impact of farming practices. Quality information is critical for farmers, enabling them to set achievable goals and share techniques with one another to improve the sustainability of the industry into the future.

Although well-intentioned, the current sustainability reporting framework is fragmented, complex and time-consuming, preventing farmers from consistently showcasing their efforts to decarbonise and reduce their environmental footprint. As a result, players in the agricultural sector are losing motivation and trust in the transition process.

Strengthening our data capabilities will help the sector address the current lack of reliable environmental information. It is essential to have robust measurement, reporting and verification standards in order to move forward, maintain

¹ Per FY2023 figures.

momentum, and encourage farmers to keep going. These standards will help give farmers credit for their efforts, improve understanding of the environmental impact of agricultural practices, and contribute to the development of new technologies and techniques for farmers to benefit from.

Incentives

Our farmers understand the critical role of sustainable agriculture practices and see the impact up close and personal. But investing in new farming practices can be expensive, and weather related financial relief packages compensate farmers equally, irrespective of how climate resilient their business is.

The Government needs to recalibrate its approach so that financial incentives encourage farmers to be proactive in responding to climate change and reward them for their efforts to adapt.

Investment

Historically, sustainability efforts have been powered and funded by farmers themselves through sweat-equity. The tight-knit nature of farming communities sees farmers and Landcare groups trialling approaches, swapping insights, and floating ideas between themselves at local BBQs and town halls.

But this approach to exchanging knowledge means that farmers in other geographies aren't benefitting from insights which may be applicable in their businesses too.

Farmers don't have a lot of wiggle room to experiment with new approaches—each year brings new challenges exacerbated by changing climate conditions. Droughts and floods are a constant threat, and battling these very real and life-threatening challenges can significantly

derail enthusiasm for innovation.

In order to make real change, the Government and larger players must invest in research and development to bolster knowledge of sustainable practices across the country, including the identification and scaling up of approaches that are working. Put simply, more investment means more innovation, and more innovation means more solutions to climate challenges—solutions that the agricultural sector urgently needs.

Australia can become a leader in agricultural sustainability

Our farmers have always known the importance of working in ways that will support future generations. But it's no longer enough for them to go it alone, with little recognition of their hard work and passion for change.

Now is the time for Australia to be on the front foot to ensure the economic resilience and competitiveness of our agricultural sector, while also preserving our land and food-production systems for future generations of Australian families.

This paper explores how Australia's agricultural sector can become a global leader in sustainability. Its companion paper—*Measuring up*—considers in more detail how best to consolidate and simplify our approaches to sustainability data measurement and analysis, building on the [Australian Agricultural Sustainability Framework](#).

Our agricultural sector is the bedrock of Australian life. This research is integral to ensure our farmers, their families, and consumers of meat and produce have a bright future ahead.

This blueprint shows how.

Our blueprint for advancing sustainable agriculture in Australia

- Intention**
 - 1. Set clear net zero objectives for the agriculture sector
 - 2. Set a mandatory nature reporting timeline for the agriculture sector
 - Information**
 - 3. Prioritise the development of standardised environmental measures
 - 4. Strengthen national environmental data capability
 - Incentives**
 - 5. Bolster tax concessions for sustainable agricultural practices
 - 6. Tie drought relief assistance to resilience efforts
 - Investment**
 - 7. Increase direct government funding of agricultural research and development
-

The environmental impacts of the agricultural sector

The agricultural sector is integral to the Australian economy, contributing [13.6%](#) of our exports and [\\$94.3 billion](#) to our GDP in FY2023. We export almost [three-quarters](#) of our agricultural products, generating approximately [\\$80 billion](#) in revenue each year.

However, the environmental footprint of our agricultural sector is significant, resulting in lasting damage to our climate, water resources, and biodiversity.

The emissions problem

The agricultural sector is particularly vulnerable to the [impacts of climate change](#), with farmers experiencing decreased production and price volatility as a result of extreme weather conditions.

At the same time, agriculture is a significant contributor of the greenhouse gas emissions driving climate change—primarily from methane released by ruminant livestock and nitrous oxide from fertilisers and soil management practices. Agrifood systems are currently responsible for [nearly a third](#) of global emissions, and domestically, the agricultural sector is our second worst polluter, accounting for [16.8%](#) of net greenhouse gas emissions (see [Figure 1](#)).

Perhaps the greatest challenge in reducing the environmental impacts of the agricultural sector is its high level of methane emissions. Enteric methane—produced by livestock—is currently reported as the most significant source of on-farm greenhouse gas emissions in the agricultural sector, responsible for [70%](#) in 2022.

Methane is significantly more damaging for the atmosphere than carbon emissions. Estimates place methane to be 25–28 times more potent than carbon dioxide over a 100-year period, and between [84 and 86 times](#) more potent over a 20-year period.

The emission of nitrous oxide on farms—another gaseous byproduct of agricultural processes—is similarly concerning due to its relative potency, with an estimated global warming potential 298 times greater than that of carbon dioxide over the span of a century.

In addition to on-farm methane and nitrous oxide production, a considerable amount of the agricultural industry’s emissions occur off-farm, during the transportation, distribution, processing, and packaging of inputs and products. Each of these stages involve different stakeholders, technologies, and practices, and may be undertaken by different operators and industries, complicating the task of implementing uniform sustainability measures throughout the agricultural value chain.

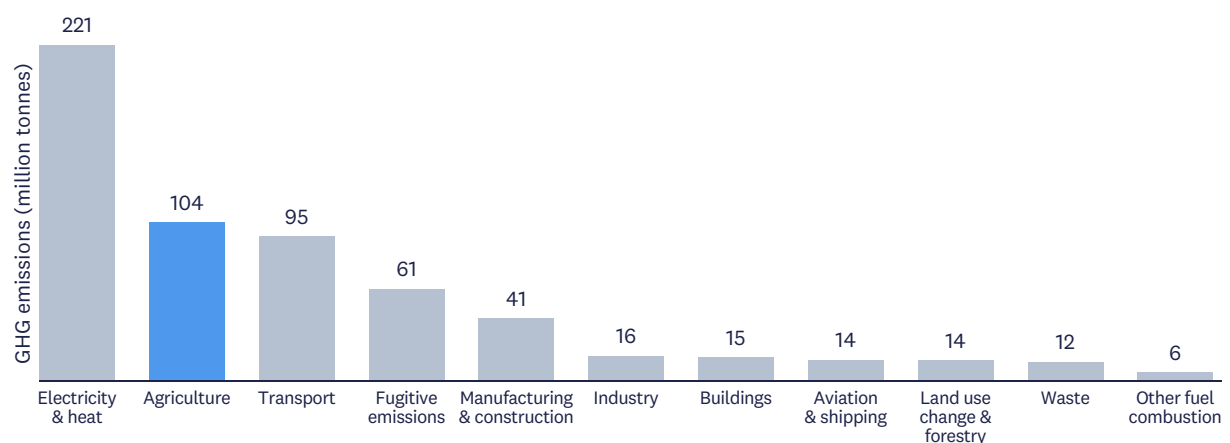


Figure 1 Greenhouse gas emissions by sector, Australia (2020)

Source [Our World in Data](#)

This combination of on-farm methane production and value chain emissions means that decarbonisation initiatives for the sector are inherently complex, leading to the view of agriculture as a ‘hard-to-abate’ sector. Achieving meaningful emissions reductions will not only require significant investment into

research and innovation, and the development and deployment of commercial technology, but also comprehensive training, support, and incentivisation strategies to reduce the climate impacts of agriculture.

Cow burps and climate crisis

Australia is the 12th largest contributor of methane worldwide—a greenhouse gas that, in the short-term, has significantly more global warming potential than carbon dioxide, and has been credited by the International Energy Agency for contributing around 30% of the rise in global temperature since industrialisation.

The need to cut down our methane production has not gone unnoticed by policymakers. In 2022, Australia, along with 120 countries, signed the Global Methane Pledge to commit to an ongoing reduction of global methane emissions to a level consistent with a 1.5 degree warming cap.

Yet, since signing the pledge, Australia still has no official methane reduction targets, and our methane emissions continue to increase. This year, the Department of Climate Change, Energy, the Environment, and Water (DCCEEW) forecast methane emissions of 126 million metric tonnes of carbon dioxide equivalent—a figure likely to be far higher in reality—with 64 of those coming from agriculture.

Indeed, most of Australia’s methane emissions (around 45%) are produced by the agricultural industry. Ruminant animals like cattle and sheep are the most prodigious sources of methane on farms, thanks to microbes in their bodies which generate the gas as a byproduct of digestion.

Increased demand for red meat has driven a year-on-year expansion of Australian cattle herds by 22%—from 24.4 million cows in 2022 to 29.9 million in 2023—and is set to push our sheep flock to a 15-year high of 79.1 million heads in 2024.

Strategies to reduce methane emissions from livestock include dietary and nutritional management modifications. For example, incorporating a higher proportion of forage legumes in livestock diets has been shown to lower methane emissions. Similarly, the use of dietary supplements, such as tannins, has demonstrated a reduction in methane production by 13–16%. Biological control methods, such as employing viruses and proteins to target methane-producing microbes, may offer another effective approach to mitigating methane emissions.

Water woes

Water is essential to life, but it's also a key player in the world of agriculture, with the sector accounting for [74%](#) of water consumption in Australia.

Some cattle need to drink up to [160 litres](#) of water a day—a vast quantity compared to the [2.7 and 3.7 litres](#) humans require to stay alive and healthy. With global population growth, and more drought and flooding anticipated as the climate continues to change, water scarcity and water management are becoming [increasingly pressing issues](#) for both humans and animals, in Australia and beyond.

In [1983](#), the formalisation of water trading in South Australia enabled Australia to become one of the first countries to separate land and water rights. By 2004, almost all other states and territories recognised water rights under the National Water Initiative reforms, with state-based schemes like NSW's Water Strategy and the ACT's Water Resources Act providing frameworks for the sustainable management and allocation of water resources.

Today, after further expansion and frequent iterations, Australia's water market and management schemes are [considered](#) by many to be some of the most sophisticated approaches to water management in the world. However, challenges remain, including ensuring equitable access to water for agriculture, industry, and environmental needs, as well as addressing the impacts of climate change and drought on water availability.

These challenges have been illustrated by issues arising from the [management](#) of the Murray-Darling Basin—Australia's most significant water asset, which supports [8,400](#) agricultural businesses. The ecological health of the water system has materially declined over recent decades, decimating [fish stocks](#) and depriving farmers of crucial ecosystem services for agricultural production. For instance, disturbances to natural flooding cycles inhibit the deposit of nutrients in floodplain soil, reducing its [fertility](#) and [suitability as a habitat](#) for wildlife. Recent announcements of [\\$300 million](#) in regional community support provide some indication of the scale of intervention required to ensure the environmental health of the Basin.

Floodplain harvesting is a particularly pernicious [challenge](#) for the Basin. In addition to [concerns](#) being raised about the fairness of water usage, water from the Basin suffers from a lack of transparency around pricing—particularly with respect to foreign ownership—and the potential for profiteering. Foreign actors hold a growing share of water entitlements, with more than [11%](#) of water entitlements held by foreign actors in 2021. This growing share of non-Australian owners of water rights raises pertinent questions about the security of the natural resources we rely on—and prompts discussion on how best to ensure our water services Australian needs.

Biodiversity under threat

Biodiversity conservation continues to emerge as an existential challenge as we transition to a nature-positive economy.

Agriculture encompasses [over half](#) of Australian land—responsible for feeding the nation, but not without a price. Land clearing for agricultural purposes is Australia’s leading cause of [habitat loss](#), responsible for a decline in biodiversity and diminished soil fertility. The irony is profound—with each hectare ploughed, we [compromise](#) the delicate ecosystem services essential for thriving and productive farms.

Over the past two centuries, Australia has experienced the [greatest decline](#) in biodiversity of any continent, largely driven by [agricultural](#) activities and land clearing.

The expansion of cattle pastures is the biggest contributor to [deforestation](#) globally.

In Queensland alone, the expansion of cattle pastures and farming has led to the clearing of [680,000 hectares](#) of land in FY2019, destroying native habitats, impacting biodiversity corridors, and significantly reducing nature’s ability to capture and store harmful carbon emissions. Estimates show that deforestation currently contributes between [12 and 20%](#) of global greenhouse gas emissions.

The relationship between agriculture and biodiversity is intricate and inherently complex. Biodiversity is the silent workforce behind agriculture—a network of interactions which sustain crop yields through natural processes like [pollination, pest management, and soil regeneration](#).

When we lose diversity and balance in the ecosystem, these natural processes falter, resulting in decreased agricultural productivity and [diminishing returns](#). It is crucial that farmers work to protect biodiversity—not only for the environment, but also the long-term security and economic prosperity of our food systems.



The economic necessity of sustainable innovation

Enhancing the sustainability of Australia's agricultural industry is both an environmental imperative and an economic necessity. As global expectations evolve, environmental impacts are becoming increasingly factored into global trade negotiations. Implementing sustainable agricultural practices will be crucial for maintaining market access to align with shifting consumer preferences, and for meeting climate targets. By prioritising sustainability, Australia can secure its position in the global market and drive long-term economic resilience.

In FY2023, almost [three-quarters](#) of Australia's agricultural products were exported, generating approximately [\\$80 billion](#) in revenue. With agribusiness sales projected to reach [\\$250 billion](#) by 2030, Australia's reliance on agricultural exports underscores the urgency of prioritising alignment with global sustainability standards to maintain access to international markets and capitalise on revenue projections.

This applies across the range of agricultural products we export. The European Union's (EU) [Deforestation Directive](#)—a ban on products whose supply chain can be linked to land clearing—could significantly impact the export potential of Australian commodities such as [beef and leather](#), given the cattle industry's [disproportionate contribution](#) to deforestation activities.

Biodiversity-related trade provisions are also being increasingly utilised, with the [EU and the US leading](#) in incorporating such provisions, followed by Peru, Canada, and other European countries outside the EU.

On home turf, consumer preferences continue to shift towards more sustainable products. [58%](#) of Australian customers reported that they would stop purchasing a previously favoured product if they discovered it lacked a commitment to sustainability, indicating an emerging trend aligned with global emission reduction targets. Although this may not translate to consumers paying a premium for sustainable substitutes—particularly in a cost of living crisis—companies are increasingly embracing environmentally responsible practices to meet this growing green demand.



Greening the pastures

Challenges concerning the climate, water, and biodiversity impacts of agricultural production are not news to those in the industry. The need to ensure long-term sustainability is particularly relevant for the [99%](#) of Australian farms that are family-owned, where preserving land productivity for future generations has long been a priority.

Today, between a third and a fifth of Australian farmers are already adopting practices to safeguard the long-term viability of the agricultural sector, and more broadly, our ecosystems (see [Figure 2](#)).

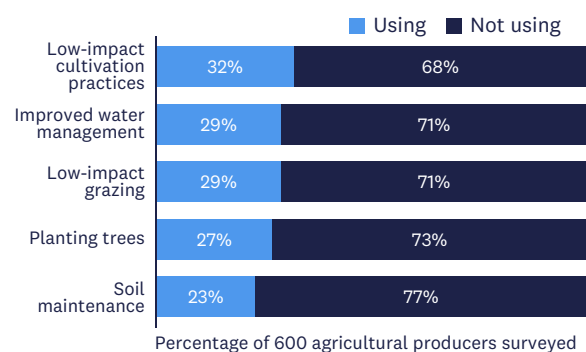


Figure 2 Percentage use of the top five most common on-farm sustainable management practices (2021)

Source [Australian Farm Institute](#)

Many of these practices focus on soil maintenance. For example, variable rainfall patterns in the [northern cropping region](#) (spanning central Queensland to northern New South Wales) enable farmers to employ [double cropping](#). This practice involves alternating between a primary crop and a secondary crop, often referred to as a cover crop, which helps improve soil health and fertility. Double cropping effectively [prevents soil erosion](#) from wind and water and [reduces nitrate leaching](#), meaning that the soil's nutrient composition (including its organic carbon content) is better maintained. As a result, soil produces fewer nitrous oxide emissions, and the need for fertiliser is significantly reduced.

Farmers across Australia have also [long used](#) legumes in crop rotations for their [nitrogen fixing properties](#), which adds usable nitrogen to the soil via bacteria for healthier and more productive crops. This practice has been estimated to save Australian agricultural producers up to [\\$3.5 billion](#) per year in nitrogen fertiliser costs.

Additionally, farms across Australia have demonstrated a shift from deep ploughing and chemical fertilisation towards precision farming, in which fields are minimally tilled (or 'strip tilled') on an as needed basis to preserve the [moisture](#) and [organic carbon content](#) of soil. Precision farming practices are widespread across Australia—having been implemented by farmers in districts such as [Moree](#) (NSW), [Tully](#) (QLD), and [Manjimup](#) (WA)—and have been found to be particularly suited to high-value crops like [wine grapes](#) by growers in the Adelaide region.

Agroforestry—the planting and maintenance of tree coverage on agricultural sites—has also gained traction across Australia, having been implemented in farms in [Gippsland](#), [Northern Tasmania](#), the [Gympie Region](#), to name a few. The benefits of agroforestry are numerous, and include improvements in water quality, the provision of shade for crops and livestock, and profits from timber harvesting.

Finally, techniques such as [rotational grazing](#) as used by [smaller livestock producers](#) can effectively mitigate the adverse impacts of grazing and cultivation on their land.

As these practices continue to evolve and gain momentum, Australian farmers are making significant strides toward building a more sustainable agricultural future, demonstrating that innovation and environmental stewardship can go hand in hand in addressing the sector's challenges.

Biogas capturing on Australian piggeries

Farming practices which create circular systems to capture and reuse on-land energy sources enhance sustainability, reduce waste, and minimise reliance on fossil fuels, ultimately leading to improved agricultural productivity and environmental health.

One promising development in this area is the production and use of biogas as a renewable energy source. Biogas capture technologies, already in use in some Australian piggeries, showcase how sustainable agricultural practices can turn waste into profit.

When manure and waste feed is flushed into an on-site anaerobic pond (a water-filled pit topped with a dense, gas-tight covering, commonplace on piggeries for waste management) or specially engineered tank, it can be digested and filtered to produce biogas. Recycling pig waste in this way has been found to reduce farm emissions by up to 74% over the long term.

In addition to the potential revenue earned from Australian Carbon Credit Units (ACCUs)² and Renewable Energy Certificates, farmers can cut energy costs by using captured biogas to power their operations. For example, BettaPork, a farm located in Central Queensland, reported saving nearly \$600,000 in electricity costs this way. Additionally, heat generated as a byproduct of biogas capturing can be harnessed to keep livestock warm, thereby providing a more energy-efficient heating solution for farms.

As of 2018, 21 piggery units in Australia from 15 separate businesses used biogas capturing systems. Although not all pork farming methods are suitable for biogas collection—such as farms that raise pigs outdoors or have a herd too small to store enough waste for processing—biogas capture technologies present an attractive opportunity for medium- to large-sized piggeries to reduce their energy costs by converting waste into power.

² As of November 2024, over 700 ACCU-generating projects were active across the Australian agricultural sector.



Tough terrain to cultivate change

The obstacles faced by farmers around the world in the transition to sustainable production are profound.

As the global population grows, global food systems are increasingly under pressure to produce more than ever. Meanwhile, the dire effects of changing climate conditions are rapidly becoming evident, highlighting the urgent need to reduce the environmental impacts of our most destructive industries—and fast.

In Australia, our first and foremost challenge is that we struggle to measure and report the health of our land at farm-level, particularly with regard to climate and biodiversity measures. The current patchwork of sustainability metrics complicates efforts to track the environmental impact of agricultural activities—a task already made difficult by the scale and diversity of Australia’s geography and the challenge of decarbonising a multitude of agricultural processes.

The tension between the concentrated market share of food retailers and the large number of smaller-scale farms is a dynamic which guides the sector’s ability to innovate. The competitive market environment and the seasonal volatility of returns stifles farmers from marshalling investment into technologies which could help reduce their emissions and environmental impact. In addition to financial constraints, farmers have [highlighted](#) that bureaucracy and regulation are major barriers to adopting sustainable practices.

Additionally, Government efforts to assist farmers in surviving through changing climate conditions has inadvertently rewarded the very behaviours responsible for environmental degradation, perpetuating a cycle of harm instead of fostering sustainable practice.

While intimidating, these challenges are not insurmountable. By reinforcing clear and consistent environmental metrics to gather farm-level baseline data, while realigning incentives and channelling investment into the research and adoption of sustainable practices, Australia can take the first crucial steps to becoming a global leader in sustainable agriculture.

More mouths to feed

As Earth’s population grows, agricultural systems around the world are faced with the challenge of having to [increase the scale and intensity](#) of production to feed the estimated [10 billion humans](#) that will inhabit the planet in 2050. At the same time, changing climate conditions have created an imperative to cut down on the environmental impacts of our most destructive industries, including agriculture.

Farmers are not only being asked to produce more than ever before, but also more sustainably than ever before.

In addition to meeting homegrown demand, Australian food production is under pressure to produce more for the export market. [Rising incomes](#) in the ASEAN region and China—our [two largest](#) agricultural export markets, and some of the world’s most [voracious consumers](#) of meat—has fueled the increasing demand for emissions-intensive agricultural products.

Catering to these expanding markets sustainably while minimising environmental impact is a formidable challenge that will not come easy. It will require technological advancement, research, innovation, and above all, widespread adoption of sustainable practices by farmers, both in Australia and abroad.

Measurement and data challenges

Consistent and reliable measurement systems for environmental qualities such as biodiversity, water quality, soil quality and climate—as well as a comprehensive understanding of baseline conditions—are essential for tracking and quantifying the impacts of agricultural activities on the health of our land.

But, the ways we currently measure environmental qualities vary in sophistication. Measures for soil and water quality are fairly fit for purpose, but due to the jumble of sustainability

reporting methodologies in Australia, we lack a comprehensive set of climate and biodiversity metrics at the farm-level.

Current frameworks for sustainability reporting are fragmented and complex. Differences in terminology, products, and scope mean that there is little cohesion across existing industry frameworks, which in themselves are subject to varying [state-led regulations](#). Biodiversity data in particular is in its infancy, with a range of different competing technologies, and no internationally agreed-upon metrics, baseline, or process for data collection, storage, or utilisation.

The voluntary nature of Australia’s current sustainability reporting frameworks exacerbates data collection challenges, as farmers are likely to select the measurement frameworks which best suit their circumstances. The result is a patchwork of metrics, complicating meaningful comparisons across different agricultural sites.

In order to understand current baseline conditions and the impact of sustainability initiatives, on-farm calculations are required. Unlike soil and water quality, which can be measured from farm to farm, emissions and biodiversity can be more difficult to measure and quantify.

Despite the development of [various tools](#) by universities and industry bodies to calculate agricultural greenhouse gas emissions, current frameworks lack consensus on what should and should not be included in emissions counts. For example, although both the [Dairy GHG Accounting Framework V14.8](#) and the [Australian Dairy Carbon Calculator v5.2](#) are intended for use by the same type of farm, only the former includes herbicides and pesticides in its estimation of scope 3 (i.e. pre-farm gate) emissions.³

Approaches to biodiversity measurement are [similarly fragmented](#), with little convergence about national or state, let alone on-farm, measures. The lack of consistency seen between climate and biodiversity frameworks indicates a pressing need to streamline approaches to measuring and reporting key environmental indicators.

Complexity at scale

Australia is big, with numerous, highly diverse ecosystems, and we produce almost every agricultural product you can think of. Australia’s scale presents pragmatic challenges when it comes to measurement, reporting, and verification—increasing the cost and complexity of these activities. The diversity of products and landscapes also makes it difficult to establish uniform standards, given that agricultural processes interact with different ecosystems in distinct ways.

Value chain dynamics

The structure of the agricultural sector is unique along each part of the value chain. At the producer end, the [vast majority](#) of Australia’s [87,000](#)⁴ agricultural businesses are small, family-owned operations. In contrast, the distribution end of the value chain is highly concentrated, with only a handful of players taking up a large portion of the market. In 2023, Woolworths, Coles, Aldi and Metcash accounted for [73% of market share](#) of Australian grocery retailers (see [Figure 3](#)).

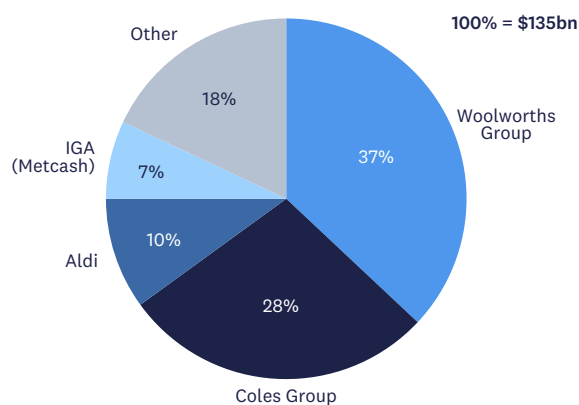


Figure 3 Market share of Australian grocery retailers (FY2023)

Source [Independent Grocery Code Reviewer](#)

³ Versions current at time of writing.

⁴ With an estimated value of agricultural operations over \$40,000.

The total number of farms in Australia have decreased over time as smaller producers have banded together (Figure 4a). This trend towards consolidation is visible across all aspects of the sector—with beef production a notable exception (see Figure 4b)—impacting farming practices in ways that both benefit and detract from sustainability. While larger businesses are often equipped with the financial resources to invest in trialling new approaches to production, the pressure to create shareholder value may sometimes result in short-term profit being prioritised at the expense of longer-term sustainability.

On the other hand, the remaining number of smaller, family-owned farms are intrinsically motivated to take a long-term approach to caring and maintaining their land to ensure it remains viable for future generations. As a result, these farmers have been a critical driving force in many of Australia’s innovations and advancements in sustainability. However, the costs associated with developing, testing and implementing sustainable approaches—including for data tracking and measurement, research and development, and testing new innovations—can often be too high for smaller businesses to justify.

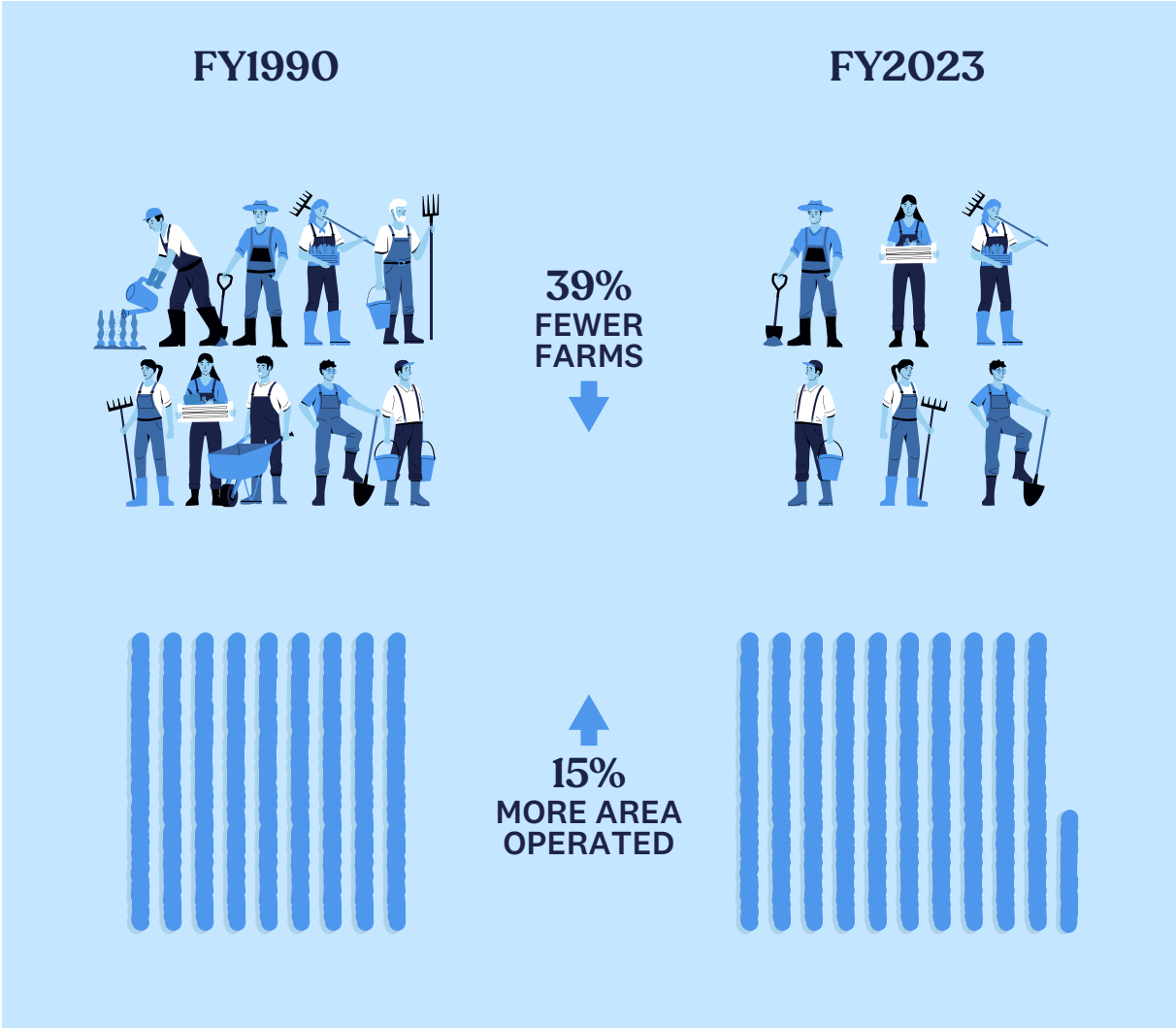


Figure 4a Average percentage change in number of farms and area operated at 30 June across six farm types (FY1990-2023)

Source [ABARES](#), Blueprint Institute analysis

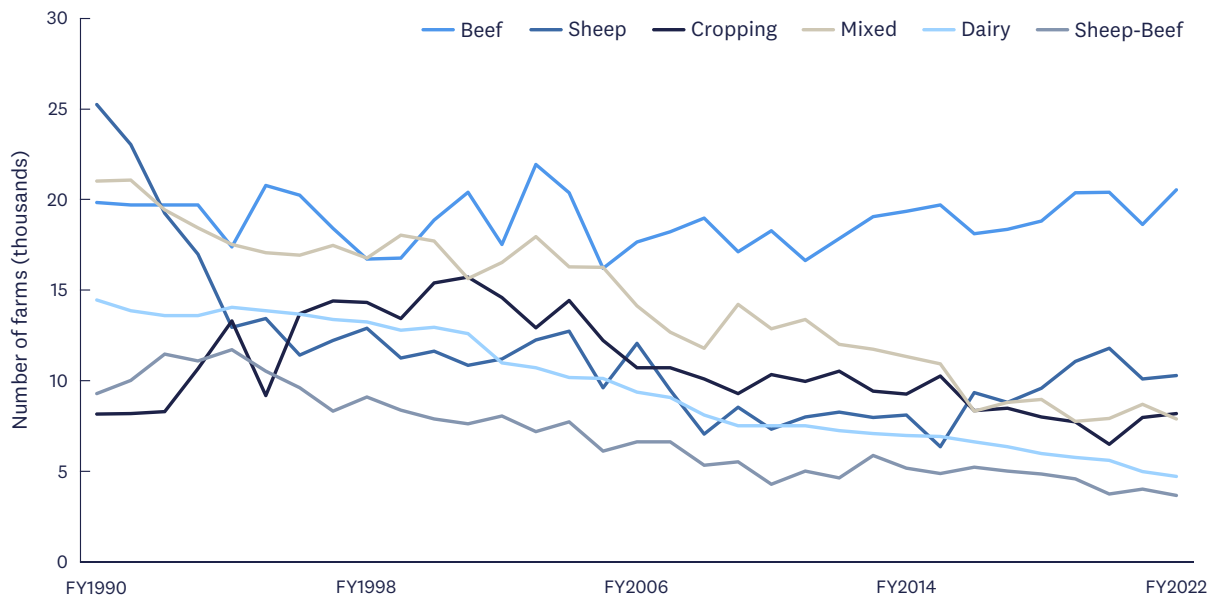


Figure 4b Growth in number of farms⁵ and area operated at 30 June (FY1990–2023)

Source [ABARES](#), Blueprint Institute analysis

⁵ Estimates based on ABARES farm surveys. Limited to farms with an estimated value of agricultural operations over a certain threshold. From FY1988, this threshold was \$20,000, but was increased to \$22,500 from FY1991, and then to \$40,000 from FY2005. Irrespective of this changing methodology, the steady decline in number of farms from FY2005 onwards indicates a continuing trend towards business consolidation.



Land rich, cash poor

As the majority of Australian agricultural producers are small-scale, the volatile nature of crop production combined with tight margins creates financial constraints which may hinder the uptake of sustainable practices.

Crop yields are highly dependent on environmental factors, such as weather conditions, soil quality, and the presence of pests or diseases. This dependency introduces a considerable degree of income volatility for farmers, who may face unpredictable harvests (see **Figure 5**). For smaller farmers, who often operate on tighter profit margins, the upfront costs of implementing sustainable technologies and practices—such as investments in new equipment, training, or changes in farming methods—can be prohibitively high.

Moreover, the time it takes for the benefits of sustainable farming techniques to materialise can act as a disincentive for farmers concerned about their bottom line. In a sector where volatile crop yields can significantly impact profit margins, it is understandable that some farmers would be too preoccupied with their short-term costs to holistically consider their businesses over long-term financial health.

Status quo bias

[Fossil fuels](#) are currently a key power source in the agricultural industry, necessary for powering machinery and transportation for distribution. With high up-front costs and limited options for low-emissions agricultural machinery and long-distance transportation—not to mention the [fuel subsidies](#) which encourage continued diesel and petrol use—shifting away from fossil fuel use will be far from straightforward.

The widespread use of inputs like chemical fertilisers and pesticides similarly poses an ongoing obstacle to decarbonisation, as farmers may be reluctant to move away from established practices without the knowledge and financial resources required to adopt sustainable alternatives.

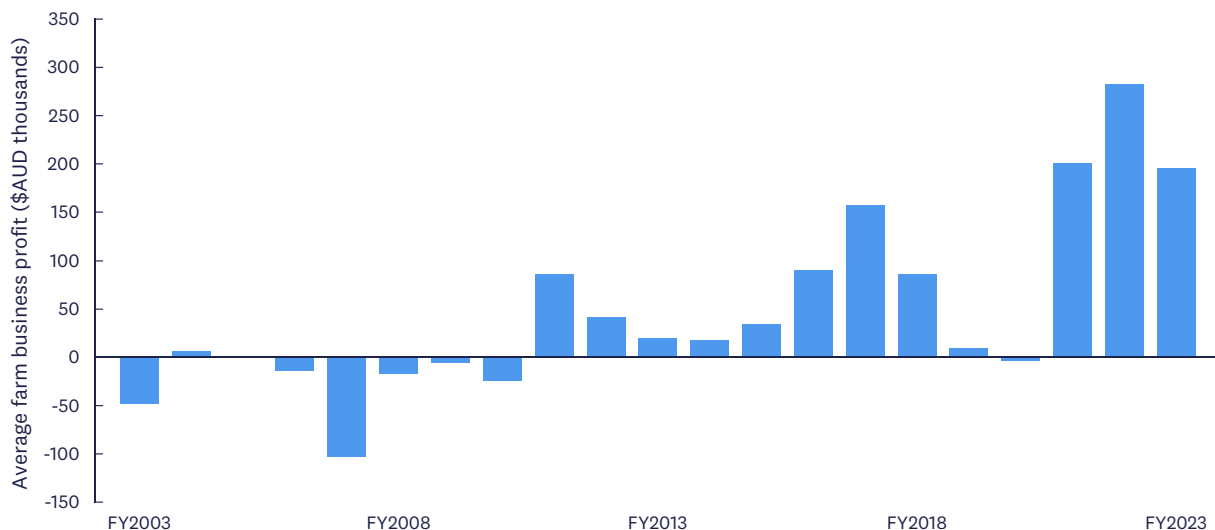


Figure 5 Average annual profits of Australian farm businesses (FY2003–23)

Source [ABARES](#)

Poorly designed regulation

The agricultural sector is subject to a complex web of [regulations](#) at every step of the supply chain, which impedes efforts to innovate for the purpose of sustainability. The approval process for agricultural projects can be time-consuming and costly, regardless of the environmental benefits a proposal may bring to the area. Furthermore, the complexity of regulations governing various agricultural practices across different regions creates a significant knowledge burden for farmers, many of which are unequipped to respond to the need for rapid innovation that this work requires.

The experience of the [Mulloon Institute](#) demonstrates how the [current approval processes](#) for environmentally beneficial projects can be exceptionally burdensome. In their efforts to rehabilitate the Mulloon Creek catchment in NSW, the Institute sought approval to implement a low-tech, proven approach to water management, involving small-scale dams along a creek bed to slow water flow.

By adopting this approach, the risk of flooding would be reduced, soil quality improved, and plant- and wildlife along the river banks rejuvenated. Despite these anticipated benefits, however, gaining the necessary approvals for the process proved costly and time consuming. The Institute [reported](#) spending over \$350,000 and more than 30 months to get the project greenlit, ultimately delaying the project and illustrating how regulatory hurdles can hinder efforts to improve the health of our land.

Another example of regulation deterring innovation can be seen in agricultural waste management. When organic resources are classified as biowaste under state or territory guidelines, regulations governing biowaste disposal can [make it difficult](#) for producers to reuse these resources—such as recycling compost to use as fertiliser. Additionally, stringent regulations on waste storage—such as those in [Queensland](#) and [Tasmania](#)—can prevent the accumulation of enough material to run efficient recycling plants.

While regulations are important for protecting agricultural assets and safeguarding the environment, overly burdensome requirements can inadvertently restrict producers, [impacting their ability to innovate](#) as well as stalling progress toward more sustainable resource management.

The 2017 [inquiry](#) by the Productivity Commission revealed that Australia's complex regulatory framework burdens agricultural producers due to the time and effort required to keep track of and ensure compliance with federal, state, and local regulations. The inquiry also highlighted that Australia's rigid regulatory framework is not always able to account for the volatile nature of agricultural production. As such, farmers are often left commercially disadvantaged by regulation intended to help and protect them—unable to operate efficiently and pursue opportunities.

Misaligned incentives

In pursuing the long-term benefits sustainable agriculture offers, many Australian farmers incur substantial cost when investing in environmentally responsible practices. Yet, in return, industry, market, and government programs are not effectively rewarding farmers for their stewardship of the land.

Perverse incentives are embedded in Australia's current [drought bailout system](#), which can sometimes discourage farmers from proactively managing their farms for climate resilience. While crucial to support farmers facing extreme conditions, government bailouts can undermine long-term sustainability efforts by providing financial relief irrespective of whether farmers have implemented preventative measures, such as water-saving irrigation systems or drought-resistant crops.

Additionally, the absence of a consistently defined set of sustainability outcomes makes it hard for farmers to get credit for the work they have done to adapt their operations. There is currently no easy way for producers to signal—either to wholesalers or end-consumers—how much more sustainable their production processes may be than their competitors.

Even when farmers take it into their own hands to advertise how environmentally friendly their products are, the limited price premium that buyers are [willing to pay](#) for green goods may not be sufficient to cover the short-term [additional costs](#) in labour and equipment necessary for sustainable production.

In other words, in the absence of a mandatory requirement for sustainable operation, farmers who forgo investment into adopting resilience building practices may stand to profit in the short-term.

Greenwashing

Greenwashing—meaning when products are marketed with reference to unsubstantiated sustainability claims—is on the rise.

Between 2022 and 2023, reports of greenwashing within corporate sectors saw a [35%](#) increase globally, with a 70% increase in the banking and financial services sector alone. On home soil, the Australian Competition and Consumer Commission (ACCC) found that [over half](#) of 247

companies reviewed in an internet sweep had made dubious sustainability claims, including notable offenders in the food, drink, clothing, footwear and cosmetic sectors. The Australian Securities and Investment Commission has since taken legal action against companies for greenwashing including [Clorox Australia](#) and [Active Super](#) for promoting [misleading ESG claims](#).

Financial instruments such as green bonds, debt-for-nature swaps, and carbon credits have also shown evidence of being liable to greenwashing. A [review](#) of 138 Australian land regeneration projects covering 3.4 million hectares found that in contrast to their eco-friendly claims, many had a negligible impact on improving carbon sequestration, with tree cover on these sites only increasing by less than one percent.

The proliferation of sustainability frameworks and metrics makes it easier for greenwashing to occur, and speaks to the need for verifiable, consistent and recognised standards for key environmental indicators like biodiversity and climate.

Recommendations

Australia has a unique opportunity to become a leader in agricultural sustainability—a position which will benefit both farmers and consumers for generations to come. And unlike addressing climate change, which requires global collective action, we can improve the sustainability of Australian agriculture by ourselves.

To set us on our journey to becoming a leader in agricultural sustainability, the Government needs to deliver on four ‘I’s—intention, information, incentives, and investment.

Specifically, this means clarifying our intention, and setting ambitious and clear goals and targets on biodiversity and climate, while increasing the efficiency of agricultural production. It means developing coordinated information systems to help farmers access data about what works, and to track and reward progress against established sustainability targets.

To get farmers on board with the transition, we also need to implement smart financial incentives to reward those adopting sustainable practices, as well as remove disincentives and regulatory barriers stalling the transition. Finally, we need to boost targeted investment into agricultural research and development to accelerate innovation and better support farmers going at it alone.

If implemented sooner rather than later, these mutually reinforcing recommendations can help recalibrate the state of play for Australian farmers—securing the future for a sustainable agricultural industry and better protecting the land on which we all depend.

Set clear and ambitious intentions

To double down on improving sustainability within agriculture, Australia needs to reconcile the sector’s trajectory with the Federal commitment to net zero emissions and clarify our intention with regards to the protection and repair of biodiversity. To enable the agricultural sector to do their part in Australia’s broader decarbonisation challenge, harmonised,

industry-wide standards for climate and nature reporting should be established, and a stepped pathway with achievable milestones outlined to guide the transition to net zero.

Set clear net zero objectives for the agriculture sector

Decarbonising the economy is a national imperative—one which every sector must bear responsibility for. But it is also a complex undertaking that will require real changes in the way we farm. Although the agricultural industry has demonstrated a strong commitment to national climate goals, there is no clear industry-wide pathway, timeframe or ambition for achieving net zero.

For example, the National Farmers Federation supports an economy-wide target of net zero by [2050](#); Meat and Livestock Australia are aiming for the red meat industry to be carbon neutral by [2030](#); and the Australian Dairy Industry has committed to a goal of achieving carbon neutrality by [2050](#).

While these goals align in a broader ambition for decarbonisation, there is less alignment on the scope, scale, and trajectory towards achieving these targets. Each agricultural industry has different challenges in the path to decarbonisation, and these targets reflect that, but the sector as a whole lacks a harmonised understanding of what the end goal of agricultural sustainability looks like, and the pathway to getting there.

To harmonise efforts already underway and improve the likelihood of achieving decarbonisation in the agricultural sector, a sector-wide emissions target with clear and measurable milestones should be established and committed to by the industry’s major players. Staggering milestone objectives to demand higher quantities of emissions reductions each year would encourage farmers to continually explore and adopt sustainable practices, reflecting a more realistic pathway to achieving net-zero emissions.

Set a mandatory nature reporting timeline for the agriculture sector

To enable good planning—as well as the development of the necessary tools, skills and systems to support the effective reporting of the impacts of different activities on biodiversity—the more clarity there is about the likely introduction of mandatory nature disclosures, the better.

Mandatory reporting for environmental measures is becoming more commonplace internationally as a tool to measure and track progress towards climate goals. Alongside countries like the US, EU, UK, Canada and Japan, Australia [recently introduced mandatory climate reporting](#), requiring companies to outline their strategies for mitigating climate impacts and disclose any climate-related financial risks they face.

The next cab off the rank is [likely](#) to be mandatory nature reporting, which will obligate businesses to disclose how much their activities, and those of their suppliers, are impacting nature.

Like the climate-related financial disclosure regime preceding it, the effectiveness of mandatory nature reporting will hinge on the groundwork laid by voluntary participation now. The success of the climate-related financial disclosure framework—which saw [78%](#) of ASX100 companies voluntarily reporting in 2023—underscores the importance of achieving a participatory critical mass for establishing a robust, industry-wide standard.

Farmers already know well that agricultural sites can only be as profitable as the land is fertile, and that their bottom line is dependent on the health of their land. The early adoption of mandatory nature reporting will therefore provide both short- and long-term benefits to the Australian economy—as investors will be better informed about the environmental risks of a site, and the natural assets upon which farmers’ businesses rely will be better preserved.

Establishing a clear baseline for measures such as biodiversity and soil quality will be paramount to a robust nature reporting framework, so that farmers can see what practices (by themselves or in tandem) are beneficial to the land.

For successful implementation, standards for nature reporting should be set and communicated early on, so that farmers can plan and prepare for the changes. The Government will also need to think about how to ensure an adequate supply of the people with the right sets of skills such as ecologists, along with the necessary training, systems and processes to support the change.

Build Australia’s environmental information capability

There is a pressing need for better collection and sharing of data on the health of our land. [Globally](#), agriculture often lags other industries in terms of its use and uptake of data, and this is particularly the case with respect to practices around sustainability.

There are good reasons for this—the Australian agricultural sector consists largely of smaller businesses, for many of whom financial constraints make it difficult to justify investments in technology.

Investments in data collection and analysis have [historically centred](#) on measuring productivity and profitability. But quality, widely-accessible data on environmental indicators like climate, biodiversity, and soil and water quality is crucial to improving the long-term health of our agricultural sector. Armed with this knowledge, farmers are better equipped to identify what is working and focus their investment into sustainable practices proven to be effective.

The Government should prioritise the development of Australia’s agricultural and sustainability data capabilities, including the development of standardised environmental measures and metrics for broader analysis. This will be essential for identifying best practices and allocating resources more effectively—which, when assisted by technologies such as machine learning, will enable the agricultural sector to move towards more sustainable operations as a whole.

Democratised access to environmental conditions and performance of private land and ecosystems will be a significant driver in the uptake of sustainable agricultural practices. To this end, we recommend the establishment of a national agricultural information-sharing network that combines government data aggregation with private sector innovation, fostering the development and exchange of knowledge to advance sustainability in agriculture.

Prioritise the development of standardised environmental measures

Standardised data measures enable comparisons across farms and regions—a crucial component of understanding the relationship between farming practices and land health.

Key indicators such as soil and water quality, biodiversity, and climate are essential for understanding the environmental impacts of agriculture, but farmers lack reliable, consistent metrics to measure these indicators. While data on soil and water quality is relatively advanced in Australia, significant work remains to be done in gathering high-quality, farm-level data on climate and biodiversity.

When it comes to information on soil quality, a concerted effort to collect and publish high-quality national- and state-level data has been made by [state entities](#) as well as agronomists, farming cooperatives, and industry groups. Notable examples such as CSIRO's [Soil and Landscape Grid of Australia](#) and the aggregated [national soil information system](#) highlight the advanced methods of soil quality data collection in Australia, with information on the pH, organic carbon content, and texture of soil available to view.

Australia has also demonstrated progress in aggregating and mapping water quality data, with resources like Geoscience Australia's [Surface Hydrology Regional Database](#) and CSIRO's [AquaWatch Australia Mission](#), as well as state-level monitoring systems such as Victoria's [Water Measurement Information System](#) and that conducted by [WaterNSW](#).

But there is more work to do. The scope of water monitoring varies between the states—with some states like [Queensland](#) monitoring total

suspended solids and nutrients and others like [South Australia](#) measuring qualities like water temperature and dissolved oxygen. Additionally, growing public concern about 'forever chemicals' like per- and poly-fluoroalkyl substances (PFAS) prompt a need to collect data on their concentration in Australian water systems, after recent non-government testing revealed unacceptably high levels.

Unlike soil and water metrics, however, emissions and biodiversity metrics are still in relatively nascent and will require the most time and effort to develop.

While a [variety](#) of emissions calculators have been developed by universities and [industry bodies](#), data [gaps](#) remain, particularly around the impact of agricultural land clearing.

Recognising the need to streamline and standardise reporting frameworks used by farmers, the Federal Government recently earmarked [\\$28.7 million](#) to establish a dedicated working group tasked with creating clearer, farm-level greenhouse gas accounting standards for agriculture, fisheries, and forestry. Crucially, however, the group's recommendations will only serve as voluntary guidelines for agricultural emissions calculators, meaning that even after their dissemination, there may still be a lack of full convergence between different emissions reporting frameworks.

Similarly, approaches to measuring and collecting biodiversity data are still relatively nascent. Biodiversity data collection is a rapidly evolving field, with multiple competing approaches to gathering and interpreting reliable localised data. Examples include the [use of AI](#) to measure birdsong, and identify the diversity of species as a result; [genome tracking](#) of scoops of air, soil or water which counts how many different types of DNA are present; the use of [citizen scientists](#) to count observations of different types of plants and animals in their backyards; and [aerial imagery](#) to look at the density and range of plants and animals.

There is not yet an agreed approach to measuring biodiversity, and certainly no national data set or spatial maps. Given that Australia is facing a biodiversity crisis, we strongly recommend the government play a more active role in coordinating these efforts, and fast tracking the

development of data infrastructure to collect and facilitate national and local comparisons—similar to those available measuring soil and water quality.

The development of metrics should always be an iterative process. The key is not to let perfect be the enemy of good.

The Government's priority should be to take decisive action by selecting a focused set of key measures for soil, water, climate, and biodiversity. These initial choices should serve as a foundation, allowing for ongoing refinement and improvement over time.

Strengthen national environmental data capability

Knowledge is power—particularly so for agricultural producers trying to understand the benefits of sustainable farming and which practices are best suited to their land.

Building on the development of standardised environmental measures, we recommend that the Government take proactive steps to establish a national agricultural information-sharing network, build a library of sustainable practices, and facilitate their exchange across regions. This means tracking on-farm activities and integrating insights across different areas like soil and water quality, climate, and biodiversity.

Integrating diverse perspectives in this way will help rapidly improve our collective understanding of sustainable agricultural practices, their effectiveness, and their suitability for different contexts, thereby empowering farmers to make more informed decisions when adopting sustainable methods appropriate for their business' need.

Historically, [Landcare initiatives](#) have acted as localised knowledge hubs for farmers and communities to collaboratively care for a particular region. The Australian Agricultural Sustainability Framework's Community of Practice provides an opportunity for industry groups to compare approaches but was never intended to be a place for individual farmers to share information on what's working and what isn't. This remains a gap.

In the private sector, companies like Agrista and Aggregate Consulting provide benchmarking

services to the agricultural sector, but focus primarily on financial, rather than environmental, metrics. This creates a gap in the market for comprehensive agricultural sustainability benchmarking—one that both Government and private enterprise can address together.

[Research](#) suggests that, unsurprisingly, farmers are more willing to participate in such arrangements when it is clear that they stand to benefit.

There would be significant benefits to enabling private development into sustainability benchmarking for the agricultural sector. Private companies often drive more innovation than the bureaucratic processes typically associated with public initiatives. Moreover, while farmers may hesitate to share environmental data with Government agencies out of concern for potential penalties, private firms could collect this data in a neutral, judgement-free way.

But the Federal Government has a vital role to play in aggregating agricultural environmental data to build a comprehensive baseline understanding of the state of our agricultural land, from which the environmental impact of particular farming practices can be measured from. Beyond aggregate measurements, this performance baseline should reflect farm-level conditions, such as the geographic context of individual activities as well as the specific mix of farming practices used.

Environment Information Australia—a Federal body proposed to commence in July 2025 if its [associated Bill](#) is passed—could serve this data amalgamation function as a complement to the data collection capabilities of private benchmarking companies.

By combining the trust in and efficiencies of private enterprise with the centralised data capabilities of the Federal Government, sustainable farming practices that have proven successful in certain conditions can be identified and shared with producers operating in similar circumstances. This collaboration would also enable the Government to more effectively pinpoint the regions and producers most challenged in transitioning to sustainable practices, allowing for more targeted and precise allocation of resources to support their efforts.

Recalibrate incentives for adopting sustainable practices

Incentives for farmers should reward work underway to adopt and improve sustainable farming practices without creating unintended consequences. Currently, this is not happening—the producers who do try to farm sustainably receive little recognition for their efforts, while many others feeling little urgency to improve their farm’s resilience thanks to the bailouts provided in the drought relief program.

To recalibrate the current incentives structure for farmers, we recommend that the Federal Government implement a tax concession program designed to reward farmers who collect baseline data on the condition of their land. This program would not only encourage farmers to monitor the environmental impacts of their agricultural activities but will also reward those whose practices have shown success in improving the condition and resilience of their land.

Australia’s drought relief program should be revised so that financial aid is prioritised for farmers who have proactively implemented preventative strategies to combat drought risk. By aligning financial support with sustainability initiatives, we can foster a more resilient agricultural sector that better protects the long-term health of both agricultural land and farmers’ livelihoods.

Bolster tax concessions for sustainable agricultural practices

We recommend the introduction of an agricultural sustainability tax concession program to reward producers who are monitoring and minimising the impact of their production activities on water, soil, biodiversity, climate, and waste. This mechanism will not only help recognise the efforts made by farmers to improve the sustainability of their operations, but will also broaden our understanding of current agriculture practices in Australia—enabling the identification and scaling of proven approaches.

Peer-reviewed meta-analysis indicates that farmers’ willingness to adopt sustainable agriculture practices [significantly increases](#) with appropriate economic incentives. This is particularly true for the large volume of smaller-scale producers in the country, for whom the marginal cost of investing in such undertakings is often higher than their larger competitors.

Farmers are subject to the same tax landscape as all businesses, with a few additional industry-specific levies. Within this framework, targeted tax concessions for sustainable practices could provide meaningful incentives for farmers while advancing national environmental objectives. Primary producers already enjoy some tax concessions including [instant asset write-offs](#), [farm management deposits](#), [income tax averaging](#) and [zone offsets](#). Tax deductions are also available for a range of agricultural expenses, including depreciating assets, water facilities, horticulture, and carbon sink forests.

There is instructive global precedence for tax incentives to drive agricultural sustainability, particularly across Europe. In 2022, France introduced a [suite](#) of temporary tax credits for organic farming, High Environmental Value certifications, restricted glyphosate use, and forest expansion. The Netherlands [MIA and VAMIL](#) schemes offer deductions on environmentally-friendly capex equipment. There are also several state-level programs across the United States, as evidenced by the [crop insurance discount](#) for cover crops grown in Iowa.

It is important to target the right tax. For the sake of efficiency and uptake, income tax deductions are effective as they target profitability directly. Reforms should seek to minimise distortionary impacts, so adjustments to tax on cash flow are most suitable as other taxes like land, payroll or company tax could have adverse effects.

Income tax offsets in the form of deductions or credits should be introduced for verifiable sustainable practices. Activities could include habitat protection, regenerative agriculture, soil health maintenance, water management, carbon sequestration and biodiversity conservation.

While agricultural sustainability tax concessions are promising, their success would be dependent on meticulous design, clear definitions of

eligible practices, appropriate tax targeting, and effective monitoring mechanisms. The same monitoring and verification challenges in other recommendations in this paper will be faced in implementation of a concession program.

Since any effort to deviate from the status quo and start implementing sustainable practice incurs costs—even at the earliest stages of measurement—concessions must be granted from day one to incentivise uptake at the earliest possible time frame.

We propose that phase one of the program would see agricultural producers be eligible for an annual tax concession for establishing a baseline measure under an agreed set of methodologies and for recording farming practices. The initial tax concessions granted during phase one will also help subsidise any technical equipment farmers require to establish baseline measurements. Phase one will incentivise farmers to enter the program early, rapidly boosting the volume of agricultural data available for analysis in doing so.

In phase two of the program, agricultural producers who can demonstrate effective reductions in their environmental impact will be eligible for additional tax credits based on their performance. Phase two will amplify the efforts of phase one by providing an ongoing clear incentive to farmers to accelerate the development and adoption of impactful, domestically-relevant measures in advance of any international mandates—helping farmers to better identify the innovations and practices that improve both the bottom line and the environmental outcomes of their business.

Tie drought relief assistance to resilience efforts

To remove the disincentives in Australia’s current drought bailout system, the government should tie financial assistance to demonstrated efforts in climate preparedness and resilience-building measures.

The establishment of conditional drought relief would recalibrate the current incentive system to better reward farmers who have invested in sustainable farming practices, such as soil health-management, agroforestry, water-saving technologies, and drought-resistant crops. This revised drought relief bailout system could be structured as a tiered support system, where farmers who have taken proactive steps as outlined in a regional drought preparation plan receive greater or faster financial aid.

Additionally, the government could provide more upfront subsidies or tax incentives for farmers to adopt these long-term resilience strategies, ensuring they have the resources to implement changes before extreme weather events occur. This would shift the focus from reactive support to encouraging proactive measures, aligning the financial aid system with climate adaptation goals.

These changes to the drought bailout system should be accompanied by robust education and outreach programs, along with an expanded network for information-sharing, to ensure farmers are well-informed about best practices for climate resilience.

Implementation risk

When designing and implementing sustainability policies in agriculture, effective stakeholder engagement and a staggered approach are crucial to avoiding economic disruption and political backlash.

Lessons from international examples—the devastating impact on Sri Lanka’s agricultural sector caused by the overnight chemical fertiliser ban in 2021 and the rise of civil unrest amongst Dutch farmers opposing the Netherlands nitrogen emissions reduction scheme—demonstrate the risks of rapid, poorly planned policy rollouts, which can lead to significant economic hardship and political instability.

These examples underscore the importance of careful planning and consultation to successfully implement any long-term policy. A staggered implementation, accompanied by clear communication on environmental measures and goals, will build public support while minimising unintended consequences—ultimately leading to a more resilient agricultural system that benefits both farmers and the broader community.



Boost investment to the development of sustainable farming practices

In order to future-proof the Australian agricultural industry, the Government needs to bolster investment to develop of sustainable farming techniques and facilitate their translation into real-world practice.

Increased funding for agricultural research bodies will alleviate some of the financial constraints faced by smaller farms, who cannot afford to experiment with new practices due to the volatility of their income. These funds should be targeted towards the development of new and early-stage sustainable and regenerative solutions for use by farms of all sizes across the country.

By channelling investment towards building a robust evidence base of proven techniques, the Government can enhance the dissemination of sustainable practices throughout Australia and, in time, reap the long-term economic benefits of a more resilient agricultural industry.

Increase direct government funding of agricultural research and development

To secure our spot as a world leader in sustainable agriculture, the Federal Government must drive greater financial support into the research and development (R&D) of sustainable farming practices. In addition to boosting Government funding for Rural Research and Development Corporations (Rural RDCs) and Cooperative Research Corporations (CRCs), this will include an increase in grants to institutions like universities and CSIRO, who have been integral to commercialising the innovations used by farmers to reduce the environmental impacts of their agricultural activities.

Targeting funding towards the institutional development and scaling of sustainable agricultural practices will alleviate the burden on resource-limited farmers to undergo experimentation by expanding the range of proven practices they can adopt. This

approach reduces the risks associated with experimentation, enabling farmers to implement sustainable practices with greater confidence.

[Cost and affordability](#) are some of the biggest obstacles for farmers implementing sustainability practices—and there is no denying that it takes substantial financial capital to develop effective techniques for mitigating the environmental impacts of farming. Unlike double dividend opportunities such as agroforestry (which provide auxiliary benefits to farmers in the form of improved crop yields), agricultural producers are less incentivised to experiment with and adopt practices which only provide long-term gains to the economy, and not short-term benefits for their bottom line.

As agricultural producers operate with tight profit margins that permit few longer-term investments, it is the responsibility of the Federal Government to offset the costs of developing critical technologies for improving the sustainability of the agricultural sector. Above and beyond the [Landcare model](#) of peer learning, the development of a comprehensive research base will provide smaller farmers with more certainty when exploring and adopting new practices, and will enable new approaches for improving agricultural sustainability can be developed.

Australia historically underinvests in our research capacity, to the detriment of our industries. The FY2025 Federal budget allocation for research and development activities comes in at just over [0.5%](#) of our Gross Domestic Product (GDP)—a proportion well below that of the OECD average of [0.8%](#). As a result, we are slow to develop new practices to improve the sustainability of operations in industries like agriculture, instead looking to imported practices which may not be suited to Australian conditions.

A primary vehicle for government funding for agricultural research are the Rural RDCs, which are financial partnerships between Government and industry. There are currently [15](#) Rural RDCs in Australia—[funded through](#) a combination industry levies on production and matched government grants—with each Rural RDC focusing on a specific commodity, such as pork, grains, and wool, to name a few. Cooperative Research Centres—multi-stakeholder partnerships between industry, researchers, and end-users—

also function as mechanisms through which government funding is translated to agricultural innovations.

Despite the sector’s considerable impact on the health of our land, R&D activities in agriculture are comparatively underfunded (see **Figure 6**). An estimated [\\$157 million](#) in federal funding was allocated to Rural RDCs in FY2023—less than a 13% increase in spending from FY2008 levels, despite Australia’s GDP growing by [63%](#) in that same period. What’s worse is that Government funding of agricultural CDCs decreased by 26% in the last 15 years, dropping from \$75 million in FY2008 to [\\$55 million](#) in FY2023.

Although the Federal Government announced the allocation of \$63.8 million to “support the reduction of emissions in the agriculture industry and contribute to the whole-of economy transition to net zero”, only [\\$4.4 million](#) of that

funding is earmarked for R&D initiatives—and will be spread out over 10 years.

Ramping up direct financial support for research and development activities will be essential to future-proofing the Australian agricultural industry. Increasing funding towards Rural RDCs, agricultural CDCs, and other research bodies will facilitate the scaling of sustainable farming practices and wider-spread implementation of innovative, home-grown solutions tailored to Australia’s unique geographical and climate challenges—ensuring resilience and adaptability in the agricultural sector.

More funding for research and development—particularly for the trialling and scaling of sustainable practices—will better equip Australian farmers to implement agricultural systems that will benefit the land and our economy in the long run.

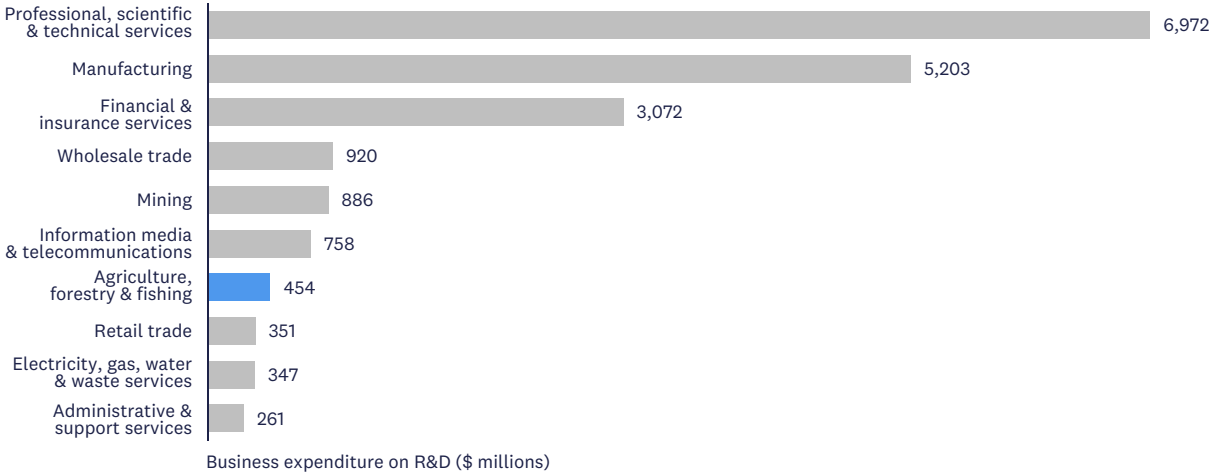


Figure 6 Research and development funding of Australian industries (FY2022)

Source [ABS](#)

Opportunities for scaling

Several exciting avenues of research underway in Australia provide opportunities to scale up innovations to farm more sustainably.

For example, the refinement of nanocellulose materials highlights the potential to transform agricultural waste into valuable products, for in both agriculture and auxiliary industries. In addition to improving soil composition and water retention—something crucial for Australian farmers facing drought conditions—this strong, flexible, and non-toxic material can be used for biodegradable food packaging, wound dressings, and drug delivery systems. The process of making nanocellulose yields water and organic fertiliser—byproducts which can effectively be recycled for use on crops.

As the production of nanocellulose in its current forms is often both cost and energy intensive, this material cannot yet be feasibly produced en masse in the agricultural industry without further development. Alongside alternate methods for nanocellulose refinement being developed elsewhere, research from the CSIRO, in collaboration with the University of Queensland and Stony Brook University, has shown promise of improving the resource efficiency of nanocellulose refinement, indicating significant potential for translation to broader commercial use.

As noted previously, the production and use of biogas also present several opportunities for producers to improve the sustainability of their operations—particularly for farmers who keep livestock, which contribute up to 80% of agricultural methane emissions. Biogas has been found to be a powerful renewable energy source, with prototypes of biomethane (purified biogas) powered tractors showing potential carbon emissions reductions of 80% compared to conventional diesel tractors.

Additionally, digestate—the waste product of biogas production—can be used as a fertiliser to both boost soil fertility and increase its carbon content, thereby reducing the need for chemical fertilisers while simultaneously providing a sleek waste management solution.

The production and use of biogas on farms is still in its infancy, but interest in its research and development is quickly gaining momentum for its potential to help reduce reliance on fossil fuels and minimise farmyard emissions.

Outside of theoretical applications, however, the use-case of biogas on agricultural sites is still unclear, as this relatively new power source is not yet well integrated into our energy systems. As livestock producers are not typically located near the gas grid, biogas generally has to be used as it is produced, with any excess being burned off. Additionally, biogas production slows down in colder temperatures—when farmers' energy needs are likely to be higher.

With improved technology and infrastructure—like the biogas battery being tried in Bunya, QLD—biogas could become a viable renewable energy alternative for farms or regional networks, as well as a potential revenue driver for farms selling off excess to the grid.

In light of Australia's pressing climate challenges, there is an urgent need to boost support for research and development of sustainable farming practices to bring the agricultural industry into a trajectory consistent with the ambition to reach net zero. Better support for homegrown innovations will enable much needed developments to sustainable agriculture to reach farmers more quickly, free from the financial pressures typically associated with traditional market contexts.

©2025 Blueprint Institute



Support our work

blueprintinstitute.org.au/donate