AUSTRALIAN Agritech ASSOCIATION

FINDEX

2023

AUSTRALIAN AGRITECH SECTOR REPORT

ACKNOWLEDGEMENT OF COUNTRY

In the spirit of reconciliation, the Australian Agritech Association acknowledges the Traditional Custodians of country throughout Australia and their connections to the land, sea, and community. We pay our respect to their Elders, past and present, and extend that respect to all Aboriginal and Torres Strait Islander peoples today, acknowledging their continuation of cultural, spiritual, and educational practices.

About this Report

This report was prepared by the Australian Agritech Association (AusAgritech) in conjunction with Findex Australia, the Australian Trade & Investment Commission (AusTrade) and Agriculture Victoria (AgVic). It aims to share with interested parties within the industry, government, and wider ecosystem our research on the state of the Australian Agritech sector, to help better strengthen the growth and development of the sector in an appropriate way.

This report was prepared by Dr Chad Renando and Charlie Simpson. Dr Renado is a Research Fellow (Innovation Ecosystem) with the Rural Economics Centre of Excellence, Startup Status CEO, and Global Entrepreneurship Network Australia Managing Director. Miss Simpson is the Community Lead for the Australian Agritech Association.

Disclaimer

AusAgritech advises that the information contained within this report comprises general statements based off an analyses of survey responses. The reader is advised and needs to be aware that such information may be incomplete or unable to be used in specific situations. No reliance or actions must therefore be made on the information contained within this report without seeking prior external professional, scientific, and technical advise. To the extent permitted by law, AusAgritech excludes all liability to any person for any consequences, including but not limited to all losses, damages, costs, expenses, and any other damages, arising directly or indirectly from using this publication and any material included within it.

FOREWORD

Agriculture serves as the backbone of regional and rural Australia, shaping our nation's economy, communities, and identity. Over the past two decades, Australian agriculture has witnessed exceptional growth in farm gate output, particularly in recent times. However, as we look ahead, we acknowledge the significant challenges facing our nation and farmers. These challenges range from climate change, land degradation, and water scarcity, to the global pressure of a growing population, which is expected to reach 10 billion people by 2050. Additionally, in key trading regions there is an emerging middle class, demanding more sustainable food and fibre production. To meet these demands, Australia must produce more from less farming land than ever before.

At the core of the solution to these challenges lies the adoption and integration of agritech, which has been the driving force behind the agricultural industry's growth. Throughout history, technological advancements, from the send drill to data-driven analytics and automation, have revolutionised farming practices, optimising productivity while minimising environmental impact. The use of advanced technologies, such as drones, GPS, satellite imagery, and smart irrigation systems, has enabled farmers to produce food and fibre more efficiently than ever before.

The first Findex and Australian Agritech Association (AusAgritech) National Sector Survey is a signifiant step for the agritech sector. This survey not only identifies opportunities for the sector but also addresses the challenges it faces and the support it needs to thrive. As we aim for the 2030 target of $100Bn in farm gate output and beyond, the Findex National Agritech Sector Survey and subsequent Report will play a crucial role in shaping the sector's future.

Moreover, this survey and report provides a platform for collaboration and partnership among various stakeholders within the ecosystem. Together, we can engage government departments, policymakers, industry associations, peak bodies, accelerator programs, incubators, education and research institutions, non-profit organisations, capital providers, and primary producers to identify common goals. By drawing insights from the survey responses, we can create actionable plans to support the agritech sector and address the challenges faced by the agriculture industry, paving the way for innovative solutions in the future.

At Findex, we are proud of our strong association with agriculture in both Australian and New Zealand. With over 20,000 agribusiness clients across Australasia, we have a long history of supporting founders, entrepreneurs, and innovation, particularly in agritech, through our agritech accelerator, SproutX, founded in 2016.

Australia has long been recognised as early adopters and leaders the development and commercialisation of agritech. Similar to the past Australian innovations like the Ridley Stripper, the Header Harvester, and the Furphy Water Cart, the agritech sector has much to offer our nation and hold promising future. Nevertheless, we believe its potential can be even brighter.

We would like to thank the other sponsors of the Findex National Agritech Sector Survey, namely the Australian Trade & Investment Commission (Austrade) and Agriculture Victoria, and AusAgritech, for undertaking and delivering this critical project.

Let us come together as a united force and steer the agritech sector towards a prosperous and sustainable future for Australian agriculture.

Sincerely,

Terry Paule, Chairman Findex

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INTRODUCTION

OPENING STATEMENT

Australia is a world leader in the commercialisation of Agritech ideas and innovations with an entire ecosystem of world class Agritech companies based in all states and territories across the country.

The technology developed and commercialised by the Australian Agritech sector will be critical for Australia reaching its ambitions for productivity, sustainability, digitalisation, jobs growth, climate goals and emission reductions. The country's leadership in other sectors, e.g. the mining sector, can be replicated in the Agritech sector to create high value and regional jobs, revitalise the regional economy, digitalise regional Australia, and leverage Australia's R&D capabilities to develop new export sectors.

Our world leading Agritech sector is the cornerstone of transforming the way we farm and how the supply chain operates, drives a world leading export reputation, and is a key enabler of sustainability and climate adaption through commercial and scaled applied technology solutions. As the industry continues to grow, it is vital the sector continues to change and adapt to resolve the increasing challenges.

This report focuses on Agritech provider input in addressing these challenges, informed by respondents to the 2023 Findex National Agritech Sector Survey. The results highlight critical themes relevant to everyone in the Australian Agritech Ecosystem including government, service providers, Agritech companies, producers, and users of Agritech products and services.

EXECUTIVE SUMMARY

The Value of Agritech

Agritech plays a critical role in Australia's future prosperity and competitiveness and is essential to the country's agriculture sector ability to navigate an increasingly complex environment. The Australian agriculture sector is impacted by changes in global demand and consumer sentiment, climate-related impacts, global trade restrictions and opportunities, emerging high-value markets and products, workforce constraints, and food security pressures.

Australia's 2030 $100Bn farm-gate output target set by the National Farmers Federation (NFF) is only achievable with Agritech's contribution to increase value and reduce costs. The results within this report, highlight critical themes that are relevant to everyone in the Australian Agritech ecosystem, including government, education providers, researchers, service providers, emerging and established Agritech companies, producers, and users of Agritech products and services.

1. Agritech is Not One-Size Fits All

Agritech is not a 'one-size-fits-all' approach. Perspectives vary significantly based on firm stage and business model. For example, the research within this report highlights that scaling product and service companies identify after-sales support as the most significant challenge, while scaling software companies identified that the greatest challenge is access to data sharing.

Stages and business models are also fluid, with many companies integrating software, hardware, and service business models. Some companies require years to become established due to long sales and product development cycles and niche markets, whereas other firms have the potential for global scale in their first one to two years.

Policy, programs, and services for entrepreneurs and innovators need to provide support across the research and business life cycle and diverse needs of hardware, software, and service businesses.

2. Workforce Capability, Availability, and Pipeline

A lack of skilled workers was the challenge rated the most significant by Agritech providers in this research. Similar to the majority of the agriculture sector, the Agritech industry shares barriers in attracting the right talent in rural areas. Agritech providers experience workforce competition from resource sectors and share the general technology sector's struggles with domestic skilled workforce availability and cost. These factors of cost and availability were rated as the highest immediate impact by survey respondents, whereas workforce capability was rated less of a priority alongside opportunities for improved workforce development from schools, TAFE, and university.

The factors of workforce development through formal education were rated lower. This is perhaps due to the gap between skills development and immediate availability. Over 40% of product and software companies indicated they are unable to find software developers. Without local availability, sourcing international workforce skills was seen as a higher barrier than formal education options. And yet formal education can be seen as a long-term solution to to addressing systemic workforce challenges.
These challenges impacted responding businesses across growth stages, with increases in staff projections being similar for both emerging and scaling Agritech businesses. However, the impact on the Australian economy is different for the two stages, with emerging companies expecting growth through Australian contract staff and scaling companies expecting growth through global full-time employees.

Workforce support is complex and requires a multi-faceted approach, one that involves government policy incentives, migration strategies, service provider and education provider support, as well as customised support for different company stages and business models.

3. Agritech Provider/Producer Relationships: Connection, Collaboration, Culture, and Trust

At its core, Agritech implementation is about the relationship between the Agritech provider and the customer. Each side of the relationship on its own was seen by survey respondents as a strength, with high ratings provided for available Agritech solutions, farming producer capability, and on-farm opportunities. However, the interaction between the two sides of Agritech provider and farming customer was identified as a challenge. Respondents gave lower ratings for willingness of producers to trial new products and low perceptions of Agritech providers' understanding of on-farm challenges.

The root cause of this challenge involves the wider Agritech ecosystem. Survey respondents identified the number one priority for change to be communication between producers, technology providers, government, and financial support.

A wider ecosystem approach is required to facilitate better connection between the Agritech provider and farming customer, building capability, capacity, collaboration, and trust. This involves all roles in the ecosystem including government, university, industry, technology providers, community groups, entrepreneur support organisations, and service providers.

4. Funding: A Portfolio Approach in a Mature Ecosystem

Past success of Agritech providers was seen to rely on funding from founders, families, and friends, while future growth was expected from venture capital and government funding. Between 75 and 80% of survey respondents indicated that self-funding was essential to success in the past. Around half of the all respondents will seek government grants in the next two years. Nearly two-thirds of emerging companies will seek venture funds by 2025.

Over 20% of established businesses not only leveraged funding from accelerator programs but identified those programs as essential to their success. Crowd funding was used less frequently and was not rated as a significant positive impact for the emerging companies that leveraged the funding option. Nearly a quarter of scaling companies expect to leverage traditional debt to grow whereas over a third of emerging companies expect to access angel funding in their near future.

A portfolio of financial capital options is needed to support the range of emerging, established, and scaling companies in the Agritech ecosystem. These options need to be consistent, reliable, trusted, and efficient to access.

5. Government support: Policy Consistency, Coverage, and Alignment

Government acknowledgement of Agritech's value and importance is evident in statements by Australian federal, state and territory policies, strategies, and programs. Agritech providers' expectations of government contribution was also seen in the 40 to 50% of Agritech providers who anticipated securing government funds in the next two years.

However, the private-sector Agritech ecosystem can be seen to operate in isolation from significant government investments in agriculture innovation and in research and development initiatives focused on pre-commercial or non-commercial university research. While Agritech providers referenced government funding as a potential 'game changer', the lack of national government consistency and alignment of Agritech-focused support reflects an Agritech ecosystem emerging and evolving almost independent of the government support rather than being driven by it.

Government funding plays an important role in incentivising Agritech markets and building capacity across areas of the ecosystem including risk capital and research, supporting development programs including accelerators and innovation hubs, facilitating engagement opportunities to build trust through conferences, field days, meetups, and smart farms, and prominent positioning of the importance of Agritech through public promotion of success stories.

6. Ecosystem Support: Boundary Spanning and Stage-Focused

The Australian Agritech ecosystem has increased in the quantity, quality, and diversity of services over the past decade. These services are accessed differently based on the stage of Agritech provider. Over a third of scaling companies received corporate engagement support while over half of emerging companies engaged with accelerator programs with one in five rating the experience as essential to their success. Support options can also be geographically centralised and of varying quality, with a small portion of respondents indicating the support had a negative impact on the success of their business.

Support services not only build capability across the ecosystem but also act as boundary spanning functions to connect each ecosystem role and address challenges related to communication and trust. The most used support service by Agritech providers was conferences and major innovation and startup events, followed by paid service providers who can be seen to facilitate trusted connections. Other top-rated services such as informal and structured mentoring, industry peak bodies, and universities all build the Agritech ecosystem's connective network.

The Australian Agritech ecosystem has matured, but more work is needed to provide consistent access and quality. Building capability in the underlying support system and the boundary-spanning function of these services will strengthen the network and address challenges raised in this report.

7. Advocacy and Representation: A Shared Need

A question raised with any report of this nature is who is accountable for addressing challenges and realising outcomes. Agriculture is a diverse sector and technology solutions are integrated and constantly changing. The challenges are systemic and require solutions that have a long-term focus. Developing these solutions can be contrary to frequently changing political and profit-driven motives.

Advocacy was the second-highest rated priority by survey respondents, followed by the need for greater communication. Advocacy provides research-backed insights to represent a diverse and dynamic field with a shared and central voice. Both government and industry benefit from representation to build capacity and capability in the Agritech ecosystem and help Australia remain competitive in the global economy.

A shared voice for the Australian Agritech sector is needed to facilitate the ecosystem in addressing the complex challenges raised in this report.

DEFINING AGRITECH

AGRITECH DEFINITION

Agritech definitions vary across government agencies. Technologies are redefining what is included in the scope of Agritech technologies, industry sectors covered by a given program or policy, and the nature of the target outcome realised by Agritech's application.

The following review provides insights into the position of Agritech within each state and territory. The review is not meant to be exhaustive, but indicative of how Agritech is positioned by the relevant government agencies in each region across Australia.

Embedded in each definition is an outcome such as increasing profitability and sustainability and enabling informed decisions. The use of the word Agritech also infers innovation, or the application of something new that adds value.

The terms Agritech and Agtech are used interchangeably in public and private sector definitions. The term Agritech is used for the purpose of this report.

As a summary, this report summarises the review with the following definition:

Agritech is the application of technology within the agricultural sector to better improve the efficiency and productivity of the food supply chain.

AGRITECH BY STATE

State	Definition
National	Also known as 'agtech', agritech is a collection of technologies, including digital, that provide the agriculture, fisheries and forestry industry with tools, data and knowledge. Agritech enables more informed and timely on-farm decisions to improve productivity and sustainability. Biotechnology and gene technology are related fields but are not captured in this definition for the purpose of this report. (Department of Agriculture, Water and the & Environment, 2022, p. 36)
ACT	Agritech is the use of technology and technological innovation to improve agriculture. (ACT Government, 2021, p. 14)
NSW	The Farms of the Future grant program aims to deliver improved connectivity and encourage farmers to adopt Agtech - aiming to facilitate tech enabled production and monitoring through improved connectivity and installation of sensor equipment which support increased productivity, competitiveness, job creation and sustainable use of resources in the selected agricultural sectors: Cotton, Livestock (sheep and beef), Grains and Horticultural (tree crops and vines) (NSW Department of Primary Industries, 2023b)
QLD	AgTech is any innovation used across the agribusiness and associated value chains (the agrisystem) to improve efficiency, profitability, sustainability and credibility. It includes hardware and software, business models, new technologies and new applications. Agtech includes: hardware and software digital technologies like applications, robotics, autonomy, and sensors, non-digital technologies like protected cropping structures, fresh produce packaging, machinery, and biotechnology. (Queensland Department of Agriculture and Fisheries, 2023b)
SA	AgTech is the rapidly evolving tools and technologies that allow agribusiness to innovate, grow and adopt more efficient production practices.It has the potential to advance the profitability and sustainability of agriculture in South Australia and covers: sensors, farm management software, imagery, smart farm equipment, genomics (SA Department of Primary Industries and Regions, 2023). AgTech is the collective term for the tools and technologies – sensors, farm management software, imagery, smart farm equipment, and genomics - that enable best-practice agriculture. It also describes the connected systems that collect, collate, store and analyse large quantities of spatial and non-spatial data to support and action decisions (SA Department of Primary Industries and Regions, 2022).
VIC	AgTech is any innovation in the agriculture sector (farm to consumer) designed to improve efficiency, profitability and or sustainability. It includes devices, sensors, virtual reality, robotics, automation and artificial intelligence.Agritech can work by itself or be part of a network of devices such as the Internet of Things (IoT), where devices can connect to and interact with each other and the internet. On farms, AgTech can: Make decision-making easier and quicker; Provide more reliable and accessible information; Provide evidence of sustainability, improved efficiency, and increased profitability (Agriculture Victoria, 2022)
WA	Agtech or agritech is the use of developing technology, digital solutions or innovative products that address an identified need in agriculture, food or beverage production in agriculture, horticulture and aquaculture with the aim of improving yield, efficiency, and profitability. Agricultural technology can be products, services or applications derived from agriculture that improve various food production and distribution processes including: Artificial intelligence solutions; Automation, robotics or autonomous vehicles; Data or image capture and analysis;. Digital connectivity solutions; Farm management; Food processing, food traceability or innovative food packaging technology; New or alternate foods or plant-based proteins; Novel farming or food production systems; Water or irrigation management. (Department of Primary Industries and Regional Development, 2023)

THE AUSTRALIAN AGRITECH ECOSYSTEM

THE AGRITECH ECOSYSTEM

The effective application of Agritech involves a complex and diverse ecosystem of roles and functions, including:

- Appropriate and relevant **government policy**;
- Support from **industry associations** and **peak bodies**;
- Integration of **research organisations** and focus of **research consortiums**;
- Quantity and maturity of **Agritech providers** including **established technology companies** and emerging **startups** and **scaleups**;
- Diversity of **enabling functions** including **financial capital**, **service providers**, and **incubators** including innovation hubs, coworking spaces, and accelerators;
- A strong pipeline of **talent** from education providers including **schools**, **TAFE**, and **universities**;
- Supporting **ICT infrastructure** including internet availability, affordability, speed, and quality; and
- An informed, sustainable, and sizable agriculture **customer base** and **supply chain**.

This agritech-focused ecosystem applies across agriculture sub-sectors as well as other related sectors including climate and environment, health and life sciences, education, and tourism and hospitality including agritourism. Technologies in agritech are broad and include artificial intelligence, quantum, artificial and virtual reality, advanced manufacturing, robotics and drones, big data, Web3 (including blockchain), data (including GPS and GIS), and cyber security.

Agritech applications are diverse and take many different forms. Building capability and capacity in the agritech ecosystem involves pulling several levers including awareness, advocacy, education, direct funding, research, commercialisation, supply chain development, and infrastructure. An example of Agritech's integrated nature can be seen in the Queensland Department of Queensland Department of Agriculture and Fisheries' Agritech Roadmap discussion, which references a dozen different policy statements as informing their Agritech position: climate, emissions, infrastructure, trade and investment, future economy, advanced manufacturing, bio futures, precincts and places, agriculture industry workforce, state workforce, and energy and jobs (Queensland Department of Agriculture and Fisheries, 2023c).

The overview below is by no means exhaustive. Omissions are unintentional and only further highlight the depth and diversity of Australian Agritech support. Most of the Australian innovation ecosystem will support Agritech but the samples below have explicit relevance to the Agritech and Agrifood sectors.

Accelerator / Incubator Programs

Accelerator and incubator programs are typically cohort-based with a start and stop date, have a competitive application process, and may include financial support in exchange for equity.

AgFrontier Agritech Incubator

Agristart Harvest Agritech Accelerator

Agritech Hub

Cicada Growlab Grains Challenge

Farmers2Founders

Foment

GATE - Global Agritech Ecosystem

Graft Challenge

Green Light Algae Biotech Accelerator Program

GroundUp Program at the Agritech and Logistics Hub

Seedlab Sisters

Seedlab Australia

Rocket Seeder

Sparklabs Cultiv8

SproutX

Startup Bootcamp - FoodTech Tasmania

National Collaborative Agencies

Connections and Virtual Hubs exist to provide connection and collaboration between different roles in the ecosystem. Unique in this role, Agricultural Innovation Australia (AIA) is a not-for-profit, public company established to facilitate joint investment and collaboration in cross-industry agricultural issues of national importance.

Agriculture Innovation Australia

Events / Pitch / Award Programs

Events and pitch and award programs provide connections and promotion of excellence to inspire future activity.

400M Ag & Food Innovation Forum

Australian Agritech Awards & Investor Showcase

C Y O'Connor ERADE Village Foundation Innovation Awards

evokeAG

Future Agro Challenge Australia

Technology Networks

Agritech networks provide opportunities for support, learning, and connections. Agritech meetups operate in capital cities in varying levels of activity. The Food and Agriculture Network (FAN) is a prominent example of a local network based in Queensland's Sunshine Coast.

Agritech Meetup South Australia

Food and Agriculture Network

NSW Agritech Meetup (Sydney)

Canberra Region AgTech

Agtech Melbourne

Agtech Brisbane Meetup

Agtech Perth

Media and Tools

Agritech-specific media provides focused stories and news, while tools include directories and connection platforms to support producers and technology providers.

Ag Tech Central

Ag Tech Finder

Farm Table

NSW Farms of the Future Program Agritech Catalogue

GrowAG

Industry Associations and Peak Bodies

Industry associations and peak bodies represent a sector or technology to provide connections, support, research, and advocacy. Australian agriculture is supported by dozens of sector-specific peak bodies. The organisations below have an emphasis on innovation and technology in the agriculture sector.

Ag Institute Australia

Agrifutures Australia

AusAgritech

AusBiotech

Cellular Agriculture Australia

Food Innovation Australia Limited (FIAL)

Food Leaders Australia (FLA)

National Farmers Federation

Rural RD Corporations

Society of Precision Agriculture Australia (SPAA)

Innovation Hubs and Precincts

Innovation hubs and precincts offer support for innovation and entrepreneurial activity in geographic locations. Agritech would be expected in all Australian hubs and spaces. The examples below have a specific Agritech emphasis.

Agritech Hub, Charles Sturt University, Wagga Wagga

UNE Smart Farm Innovation Centre

Bundaberg Agritech Hub

Centre for Entrepreneurial Agri-Technology

GATE - Global Ag tech Ecosystem

Agtech and Logistics Hub

Monash Food innovation

UTS Deep Green Biotech Hub

Investment

There are over 260 investment funds, syndicates, groups, and organisations deploying risk capital in Australia. Within this, Australian risk capital options focused on Agrifood investment are growing rapidly and becoming increasingly specialised. Many Australian funds invest in Agritech-related technologies. The examples below have a Agritech explicitly defined in their mandate.

Alchemy Venture

Artesian Capital Management

BridgeLane Group

Mandalay VC

Main Sequence Ventures

NAB Ventures

Tenacious Ventures

Research

Agritech-related research can be found across most universities through specialist research centres, research collaborations including Cooperative Research Centres (CRCs), Research Development Corporations (RDCs), and CSIRO.

Rural Industries RDC (AgriFutures)

Charles Sturt University

Solving Antimicrobial Resistance in Agribusiness, Food and Environments CRC

Fisheries RDC

Future Food Systems CRC

Food Agility CRC

Commonwealth Scientific and Industrial Research Organisation

Hort Innovation RDC

The University of Queensland

Wine Australia RDC

Dairy Australia RDC

Meat & Livestock Australia RDC

Grains Research and Development Centre RDC

Cotton Australia RDC

ECOSYSTEM MAP

THE AGRITECH GOVERNMENT POLICY LANDSCAPE

GOVERNMENT AGRITECH SUPPORT

Government plays a critical role in Agritech's development and uptake. Government grants and funding programs incentivise the market to encourage startups, attract investment, facilitate research, and ease technology trial costs. Explicit inclusion of Agritech in roadmaps and strategies provide a visible leadership commitment and allocation of resources. Agritech promotion in media releases and visible support by political leaders create signals to encourage activity in research, investment, and adoption.

The following pages highlight examples across Australia where government agencies maintain accountability and support for Agritech.

> Government is becoming more comfortable working with the Agritech sector, but there are still significant pockets that see the industry as a threat to them, rather than an opportunity.
> *- Survey respondent, scaling software company*

> We need the government to move from the old methods and follow the new digital age of fast growth, where policies and funding need to be significantly updated, supporting companies and producers who are taking in new solutions.
> *- Survey respondent, emerging product company*

AUSTRALIA - NATIONAL

Country	Australia – national
Department	Department of Agriculture and Water Resources
Report	Agricultural Innovation - A National Approach to Grow Australia's Future (Ernst & Young, 2019)
Department	Department of Agriculture, Water and the Environment
Policy statement	National Agriculture Innovation Policy Statement October 2021 (Department of Agriculture, Water and the Environment, 2021)
Strategy	Digital Foundations for Agriculture Strategy March 2022 (Department of Agriculture, Water and the & Environment, 2022)

In 2019, Ernst and Young produced the *Agricultural Innovation - A National Approach to Grow Australia's Future* report that included a policy review, global scan, and stakeholder engagement to provide 25 recommendations across five areas. The report informed the 2020 National Agricultural Innovation Agenda, updated in October 2021 with the National Agriculture Policy Statement outlining four priorities relating to exporting, climate resilience, biosecurity, and digital agriculture. The April 2022 Digital Foundations for Agriculture Strategy focused on addressing the digital agriculture priority through 30 actions across five focus areas of leadership, skills, data and governance, opportunities and value proposition, and connectivity and infrastructure.

As of the time of this report in August 2023, public consultation is open on program guidelines for the $30 million On Farm Connectivity Program (OFCP). The program focuses on primary producers to extend connectivity to boost productivity, improve health and safety and support sustainable resource management. Rebates of up to $30,000 will be available for a wide range of technologies, including external antennas, boosters and repeaters to extend coverage, and a range of devices to optimise and automate such as soil moisture probes, plant growth monitors, valve and irrigation controllers, and livestock monitoring systems.
The OFCP forms part of the $1.1 billion Better Connectivity Plan to improve mobile and broadband connectivity and resilience in communities.

> "Digital agriculture will allow for the creation of new services and markets, new job opportunities, supply chain efficiencies and greater sustainability. It will be critical to building and maintaining Australia's competitiveness as a trusted exporter of premium food and agricultural products into the future… A world class agricultural innovation system will help Australia reach the industry's target of becoming a $100 billion sector by 2030."
>
> *- Department of Agriculture, Water and the & Environment, 2022, p. 1,3*

AUSTRALIAN CAPITAL TERRITORY

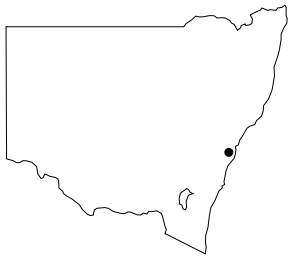
Department	Environment, Planning and Sustainable Development Directorate
Division	ACT NRM
Investment plan	Investment Plan (ACT Government, 2023b)
Focus area	Sustainable Agriculture
Initiative	Innovation and resilience
Strategy	Capital Food and Fibre Strategy Discussion Paper (November 2021) (ACT Government, 2021)
Initiative	Goal four: Support innovation in the food and fibre sector through the adoption of diverse practices, business models and new technology

Agritech in the ACT Government is supported by the Environment, Planning and Sustainable Development Directorate, including in ACT Natural Resources Management's (NRM) Investment Plan in the Sustainable Agriculture focus area and innovation and resilience objective.

Agritech is also referenced in the November 2021 Capital Food and Fibre Strategy Discussion Paper Goal Four, which asks "How do we encourage the adoption of new technologies and innovations, particularly those that diversify agricultural production and ensure it is sustainable across the landscape?". The draft Capital Food and Fibre Strategy was expected to be released for consultation in the first half of 2023.

> *Advances in technologies and farm management have helped offset yield declines. Over the next decade, as other sectors, such as energy and transport, reduce carbon dioxide emissions, there will be an increasing interest in managing emissions from agriculture and further developing opportunities for carbon abatement through innovative farming systems. It is important to ensure that ACT rural landholders are connected to information and opportunities which improve the climate resilience of their farming operations economically, socially and environmentally and enables them to contribute to the global carbon abatement effort."*
>
> - ACT Government, 2023a

NEW SOUTH WHALES



Department	Department of Primary Industries
Division	Climate
Initiative	Digital Agriculture
Area	Digital Agriculture Research (NSW Department of Primary Industries, 2023a)
Program	Farms of the Future Program (NSW Department of Primary Industries, 2023b)
Strategy	Stronger Primary Industries Strategy 2022-2030 (NSW Department of Primary Industries, 2022)
Book	Agtech: An introduction (Price & Laffan, 2021)

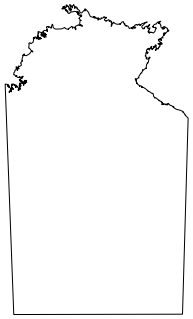
Agritech in the New South Wales Government is supported through the Department of Primary Industries outlined in the Economic Growth strategic outcome of the Stronger Primary Industries Strategy 2022-2030. The strategic outcome references agriculture technology across the six strategic priorities focusing on workforce, product development, waste, consumer outcomes, and supply chains.

The Department's DPI Climate website hosts a Digital Agriculture area which includes "projects addressing the adoption of Agtech to improve agricultural sustainability." The Digital Agriculture area includes Digital Agriculture Research and the Farms of the Future Program. Digital Agriculture Research "investigates the role of digital technologies and data in primary production and how the producer can derive value from these new tools" with a goal to "help farmers adapt to climate change and improve agricultural sustainability." Initiatives focus on horticulture, livestock, fisheries, irrigated cropping, land management, and technology and data.

The Farms of the Future Program "delivers on-farm connectivity solutions to five target regions comprising 11 local government areas (LGAs) in rural and regional NSW. It is aimed to encourage producers to adopt Agritech to assist them to boost productivity, increase their market competitiveness and improve sustainable use of resources in the agricultural sector, which includes water efficiency, drought preparedness and increasing resilience to climate change". The Program includes Agritech training, a grants program, and links to an Agritech catalogue online digital directory.

> "Regional communities and the NSW economy rely on a vibrant and resilient primary industries sector. Improving access to a capable workforce, as well as automating aspects of production are key drivers of economic growth. The primary industries sector also has the opportunity to bring benefits to the wider community through problems such as chronic disease through food as medicine, achieving zero waste through the circular economy, supply chain resilience and producing food when and where it is needed. A vibrant, strong and prosperous primary industries sector is one that delivers benefits for all people in NSW."
>
> - NSW Department of Primary Industries, 2022, p. 10

NORTHERN TERRITORY



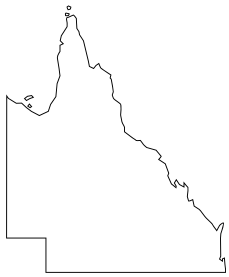
Department	Department of Industry, Tourism and Trade
Strategy	Northern Territory Agribusiness and Aquaculture Strategy 2030 (NT Department of Industry, Tourism and Trade, 2022)

Agritech in the Northern Territory is supported by the NT Department of Industry, Tourism and Trade. A Northern Territory Agribusiness and Aquaculture Strategy 2030 discussion paper was released for consultation which closed February 2022.

The strategy highlights opportunities to grow the NT agriculture and aquaculture industry from $1.3 billion to $2 billion by 2030 with one of the four strategic focus areas being adaptation and innovation. The adaptation and innovation focus area highlights opportunities related to carbon offsets, transitioning to renewable energy sources, research and extension hubs, new value add and manufacturing opportunities, new and improved supply chains, and partnerships.

> Productivity gains and deployment of technology solutions (Agtech) will drive growth."
>
> *- NT Department of Industry, Tourism and Trade, 2022, p. 4*

QUEENSLAND



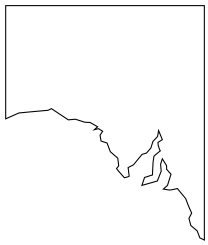
Department	Department of Agriculture and Fisheries
Program	AgTech Campaign
Roadmap	AgTech Roadmap (development) (Queensland Department of Agriculture and Fisheries, 2023a)
Strategic plan	Department of Agriculture and Fisheries Strategic Plan 2021-2025 (Queensland Department of Agriculture and Fisheries, 2022)
Objective	Innovative and globally competitive agribusinesses
Strategy	Build agtech and digital capability and capacity across value chains

Agritech in the Queensland Government is supported by the Department of Agriculture and Fisheries. A Queensland AgTech Roadmap is in development, with public consultation closing April 2023 and full release pending. The Department of Agriculture and Fisheries website hosts an AgTech landing page which includes information about Agritech and definitions and links to related policies, directories, case studies, trends, research, smart farms, news, events, investment, grants, and funding.

The Department of Agriculture and Fisheries Strategic Plan 2021-2025 also includes a specific strategy to "Build agtech and digital capability and capacity across value chains" as part of the objective for "innovative and globally competitive agribusinesses accessing improved practices, data and new technologies to enhance the productivity, profitability and sustainability of food and fibre value chains.

> We are committed to supporting agribusinesses to build Agtech and digital capability and capacity across value chains. The future is complex and unpredictable, but the opportunities to grow and prosper are energising industry, government and communities to develop and deploy new technology. The key to success is working together with partners, industry, businesses and local governments. By boosting productivity, developing new value-added and globally competitive products, and supporting regional Queensland communities and jobs across the value chain, we can continue to build a strong agribusiness sector."
>
> *- Queensland Department of Agriculture and Fisheries, 2023a*

SOUTH AUSTRALIA



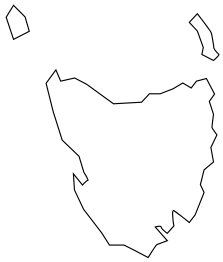
Department	Department of Primary Industries and Regions
Focus	Science & Innovation
Topic	AgTech
Area	AgTech (SA Department of Primary Industries and Regions, 2023)
Strategic plan	South Australian AgTech Strategic Plan (SA Department of Primary Industries and Regions, 2022)

Agritech in the South Australia Government is supported by a dedicated area within the Department of Primary Industries and Regions' Science & Innovation focus area. The Department's AgTech area highlights opportunities to visit demonstration sites as well as trial, demonstrate, and promote products, review and propose research projects, and access the AgTech Growth Fund.

The Department also released South Australian Agtech Strategic Plan in 2022 following three years of development that included the establishment of an AgTech Advisory Group. The Plan includes 32 actions across seven priority areas of networking and collaboration, demonstration and understanding, entrepreneurial capability, network connectivity, technology compatibility, and government leadership. Agritech is also supported by the South Australia government through the AgTech Growth Fund, distributed in rounds of non-repayable grants for projects that develop technology addressing a specific industry challenge.

> If South Australia grasps the promise of AgTech, the potential benefit could be up to $2.6 billion per annum in extra agricultural gross value of production. Unlocking this additional production is vital to achieve the South Australian Government's Growth State initiative to increase gross state product by three per cent per annum, and contributes significantly to the Food, Wine and Agribusiness Sector Plan to deliver $23 billion by 2030 to the South Australian economy."
>
> *- SA Department of Primary Industries and Regions, 2022*

TASMANIA



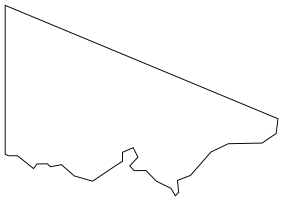
Joint Venture	Tasmanian Institute of Agriculture (TIA)
White Paper	Growing Tasmanian Agriculture Research, Development and Extention for 2050 White Paper (AgriGrowth Tasmania, 2017)
Strategy	Agricultural Research Development & Extension Principles and Investment Strategy 2018-19 to 2022-23 (AgriGrowth Tasmania, 2018)
Strategy	TIA Strategies and Initiatives to make a difference (Tasmania Institute of Agriculture, 2021)

Agritech support by the Tasmanian state government is primarily through the Tasmanian Institute of Agriculture (TIA), a joint venture between the University of Tasmania and the Tasmanian Government. The TIA was established in 2009 and is identified as the leader in Tasmania's RD&E framework in the Department's 2017 *Growing Tasmanian Agriculture Research, Development and Extension for 2050 White Paper* and Agricultural Research Development & Extension Principles and Investment Strategy 2018-19 to 2022-23.

The investment strategy highlights investment in agriculture-related technology across areas of research including productivity and adding value to industry development and sustainable production, capacity building through the application of technical knowledge, and innovative or 'blue sky' RD&E for the creation of new technology. A more recent 2021 TIA strategy TIA Strategies and Initiatives to make a difference outlines strategies that emphasise enabling technologies, including "transforming the knowledge of agriculture, food production and post farmgate practices of Tasmania's farmers, creating sustainable economic benefit for Tasmania and the world."

> "The goals we have set for ourselves are ambitious. To achieve the target of $10 billion farmgate value by 2050 set by the Tasmanian Government, Tasmania's farmgate value will need to grow 5.5% each year, for the next thirty years. Achieving this will require maximising benefit for farmgate value, optimising the value-add opportunities post-farmgate, and enhancing our resilience to climate change. Addressing the kinds of challenges we face will require us to work ever more closely with industry, government, and our communities. It is going to require careful listening and collective thinking and acting."
>
> *- Tasmania Institute of Agriculture, 2021, p. 1*

VICTORIA



Department	Department of Jobs, Precincts and Regions (DJPR)
Department	Agriculture Victoria, Department of Energy, Environment and Climate Action (DEECA)
Strategy	Strong, Innovative, Sustainable: A new strategy for agriculture in Victoria (Department of Jobs, Precincts and Regions, 2020)
Strategy	Digital Agriculture Strategy (Department of Economic Development, Jobs, Transport and Resources, 2018)
Promotion	Victoria - Australia's Agtech Innovation Hub (Invest Victoria, 2023)

The Victorian state government highlights agritech in the $65 million Agriculture Victoria strategy Strong, Innovative, Sustainable: A new strategy for agriculture in Victoria across five themes: recover, grow, modernise, protect, and promote. Agritech relates to most of the 14 commitments in the strategy and is explicitly referenced in the four commitments under the modernise theme to "Increase the adoption of new, effective and fit for purpose technology; grow a thriving and globally competitive Agtech industry in Victoria; enhance the commercialisation of research; and deliver the agriculture skills of the future".

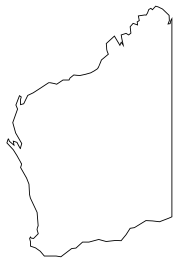
Key initiatives identified under the modernise theme include the 2020 four-year $50 million Agricultural College Modernisation Program which includes the Future Agriculture Skills Capacity Fund, and the now fully subscribed $10 million Digital Agriculture Investment Scheme. Previous initiatives include the 2020 two-year $12 million On-Farm Internet of Things (IoT) Trial. The 2020 strategy budget also funded the $15 million Agtech Regional Innovation Network (AgRIN) with initiatives including $1.3 million Agtech grants for Agritech entrepreneurs, $300,000 to establish an Agtech Angel Investor Network, and the $2.2 million Victorian Agtech Entrepreneurs Initiative to provide support for eligible organisations to deliver pre-accelerator programs for Agritech early-stage start-ups.

At the time of this report publishing in August 2023, the Hugh Victor McKay Fund was announced as a new sidecar fund for Victorian AgTech startups run by LaunchVic with funding from Agriculture Victoria. The fund will co-invest between $100,000-$200,000 into at least five early-stage AgTech startups over 12 months. Every dollar of funding is to be matched by two dollars of private investment and is expected to activate more than $3 million in total capital for founders.

The 2020 strategy builds on previous work including the 2018 Digital Agriculture Strategy that outlined five barriers to the adoption of connectivity, digital literacy, cost and investment rationale, data sharing, and interoperability of data sets and proposed five actions for research and development, startup support, on-farm adaptation, skills and education, and digital government. Invest Victoria highlights the state's Agritech ecosystem and strengths in the prospectus Victoria - Australia's Agtech Innovation Hub. The prospectus outlines three areas for the state's focus: on farm, product development and process, and distribution and logistics.

> "A stronger and more active Agtech sector in Victoria will benefit farmers through locally tested ideas and fit for purpose technology."
>
> *- Department of Jobs, Precincts and Regions, 2020, p. 9*

WESTERN AUSTRALIA



Department	Department of Primary Industries and Regional Development
Division	Agriculture and Food
Strategy	DPIRD Strategic Intent 2022–26 (Department of Primary Industries and Regional Development, 2022)

Agritech is supported by the Western Australia government through the Department of Primary Industries and Regional Development. The DPIRD Strategic Intent 2022-26 highlights priorities to "Collaborate across industry, community and regions to ensure research impact and extension, adoption of new technology, and the development of collective knowledge." and "Invest in digital connectivity, technology, and new and emerging initiatives to improve and diversify industry and regional competitiveness." Programs identified in 2023 include support for attending the evokeAG conference, support for the AgriStart accelerator, and scholarships for Curtin University's Ignition Program.

> Technology has always been at the forefront of Western Australia's agricultural industry to enable better, faster and more sustainable food production. The Western Australian Government through the Department of Primary Industries and Regional Development is committed to attracting investment into Western Australia's agtechindustries."
>
> *- Department of Primary Industries and Regional Development, 2023*

FINDEX NATIONAL AGRITECH SECTOR SURVEY RESPONSES

SURVEY RESULTS

Method

The 2023 Findex National Agritech Sector Survey was available for responses through January and February 2023.

The survey input includes data from 72 responses and gathered expert insights across the following indicator sets:

- **Respondent information:** Position, role
- **Business information:** Name, website, description, year established, stage, head office location, national operations, technologies used (general and Agritech-specific), agriculture application, social impact areas
- **Agritech sector strengths and weaknesses**
- **Agritech challenges**
- **Agritech priorities**
- **Workforce needs and projections:** Current and future by role, employment type, and geographic location
- **Support:** Past, source, and effectiveness
- **Funding:** Past and projected, source, and effectiveness

SURVEY RESPONDENT PROFILES

Profile Categories

Perspectives on Agritech challenges, opportunities, and priorities vary based on the founder's background and business stage and model. Early-stage businesses require different support from those that are scaling. Businesses developing a physical product have a different life cycle than software platforms. Both are different again to service-based businesses.

To consider these perspectives, survey respondents are grouped into categories based on business stage and business model. Stage is defined by the business relationship with customers and revenue. Business models are defined by how the primary output from the business is realised.

The grouping is not black and white and many businesses have combined business models. Hardware companies can provide service support separate from their physical product. Service businesses can develop their own software or hardware products that meet needs identified as part of their service activities.

Business stage can also relate to the business model. Businesses may be 'emerging' or pre-revenue for years as they pivot to find a niche or product market fit. Businesses based on a physical product may have time-dependent requirements such as patents and trademarks not experienced by their service or software counterparts.

Status	Stage
Emerging	1.Concept or idea 2. In development, pre-release 3. Early release, trial or prototype, minimum viable product 4. Product ready, people using the product or service
Established	5. Revenue generating, paying customers
Scaling	6. Expanding or scaling into new regions or markets

Status	Model
Product	Engineering and / or manufacturing - electronic hardware Engineering and / or manufacturing of other physical goods and materials
Software	Software, including software as a service
Service	Consulting & agency services, including legal and financial services Retail / resale of goods (incl. ecommerce) Other service-based business

Profile Categories (cont.)

Over a quarter of respondents were scaling, 27% established, and 31% pre-revenue generating or emerging. Nearly 43% were software companies, 20% product companies, and 37% had service-based business models.

		Business Model						
		Software	**Product**		**Service**			**TOTAL**
		Software, including software as a service	Engineering and / or Manufacturing - Electronic Hardware	Engineering and / or Manufacturing of Other Physical Goods and Materials	Consulting & Agency Services, including legal and financial services	Other Service-based Business	Retail / resale of Goods (incl. ecommerce)	
Emerging	1.Concept or idea	1.4%						
	2. In development, pre-release	1.4%	1.4%		1.4%	1.4%	1.4%	1.4%
	3. Early release, trial or prototype, minimum viable product	2.9%	4.3%	2.9%		1.4%		7.1%
	4. Product ready, people using the product or service	4.3%	1.4%	1.4%	2.9%	1.4%		11.4%
Established	5. Revenue generating, paying customers	10.0%			8.6%	5.7%	2.9%	11.4%
Scaling	6. Expanding or scaling into new regions or markets	22.9%	5.7%	2.9%	1.4%	7.1%	1.4%	27.1%
	TOTAL	42.9%	12.9%	7.1%	14.3%	17.1%	5.7%	

Responses Low High

> The agritech market is varied and diverse. Different sectors of the market are at different parts of the knowledge and adoption curve. For example, advanced robotics versus water management. It is difficult to generalise across the various farm environments and ag sectors."
> *- Survey respondent, scaling software company*

Company Age

Business age tends to correlate with business stage. Service-based businesses reported a more rapid path to revenue to become established in the first year while businesses that as scaling commenced five or more years ago.

	Software			Product		Service			TOTAL
Business age (Years)	Emerging	Established	Scale	Emerging	Scale	Emerging	Established	Scale	
1	4.3%			1.4%		1.4%	1.4%		8.6%
2				1.4%		1.4%	1.4%		4.3%
3	1.4%	2.9%		2.9%		1.4%	1.4%		10.0%
4				2.9%		1.4%	1.4%	1.4%	7.1%
5	2.9%	1.4%	4.3%	1.4%	1.4%	1.4%		2.9%	15.7%
6		4.3%	2.9%			1.4%	1.4%		10.0%
7	1.4%		5.7%		1.4%				8.6%
8						1.4%			1.4%
9			4.3%				1.4%		5.7%
10+		1.4%	5.7%	1.4%	5.7%		8.6%	5.7%	28.6%

Response rate

Low High

Company Headquarters

Responses by state headquarters are reflective of the population in the state and territory. Over half of the responses came from New South Wales and Victoria and close to a third from Queensland and South Australia. Insights specific to each state and territory are limited due to lower representation of responses in smaller states and territories of NT, TAS, and ACT.

	Software			Product		Service			TOTAL
Business HQ (AU state)	Emerging	Established	Scale	Emerging	Scale	Emerging	Established	Scale	
ACT								1.5%	1.5%
NSW		4.4%	8.8%	1.5%	2.9%	1.5%	2.9%	4.4%	26.5%
NT								1.5%	1.5%
QLD	2.9%		1.5%	4.4%	2.9%	1.5%	4.4%		17.6%
SA	2.9%	1.5%	1.5%	1.5%		2.9%	4.4%		14.7%
TAS		1.5%	1.5%						2.9%
VIC	2.9%	1.5%	5.9%	4.4%	2.9%	1.5%	4.4%	2.9%	26.5%
WA	1.5%		2.9%			2.9%	1.5%		8.8%

Response rate

Low High

Farming Enterprise as Target Market

Responses were distributed across the market sizes, with half of respondents identifying a target market size over 10,000 farming enterprises.

	Software			Product		Service			
Market size (farming enterprises)	Emerging	Established	Scale	Emerging	Scale	Emerging	Established	Scale	TOTAL
Less than 100	2.1%	4.2%		4.2%	2.1%		2.1%	2.1%	16.7%
100 to 5,000		2.1%	4.2%	2.1%	2.1%		4.2%		14.6%
5,000 to 10,000	4.2%		2.1%		2.1%	2.1%			10.4%
10,000 to 20,000		2.1%	6.3%	4.2%	4.2%	8.3%	2.1%		27.1%
Over 20,000			10.4%	4.2%	2.1%		2.1%	4.2%	22.9%
Unknown			2.1%				4.2%	2.1%	8.3%

Response rate

Low High

Farming Enterprise as Customers

Over half of the respondents had less than 20 customers. Businesses reflected the ability to scale into smaller and potentially niche markets as represented by the 20% of scaling businesses with less than 50 customers.

Number of farming customers	Software			Product		Service			
	Emerging	Established	Scale	Emerging	Scale	Emerging	Established	Scale	TOTAL
Less than 20	6.3%	4.2%	8.3%	12.5%	4.2%	6.3%	10.4%	2.1%	54.2%
20 to 50			4.2%		2.1%	2.1%	2.1%		10.4%
50 to 100		2.1%		2.1%					4.2%
100 to 300			2.1%			2.1%			4.2%
300 to 500					4.2%			2.1%	6.3%
500 to 1000			2.1%						2.1%
Over 1000		2.1%	8.3%		2.1%		2.1%	4.2%	18.8%

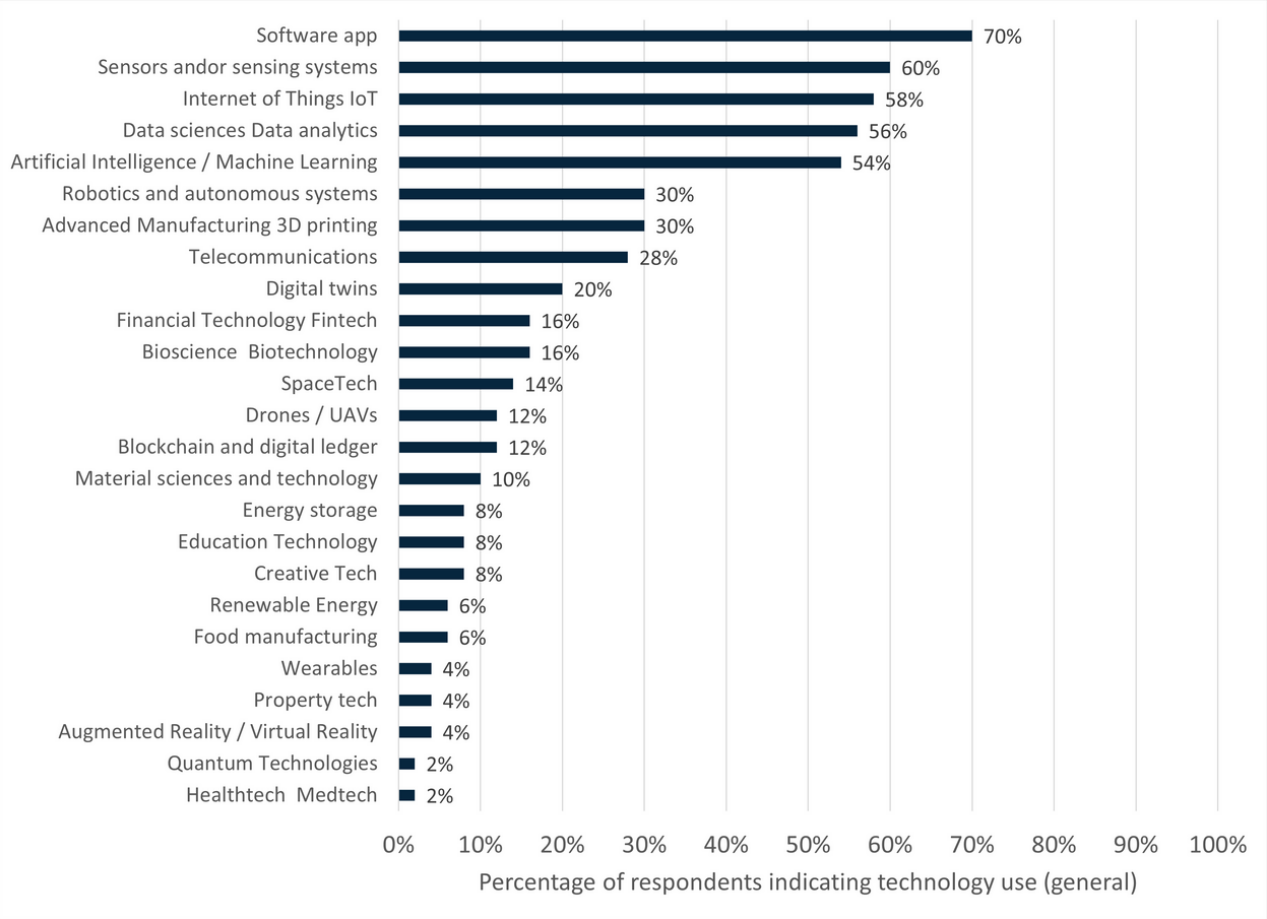
Response rate

Low High

TECHNOLOGY USE

General Technology

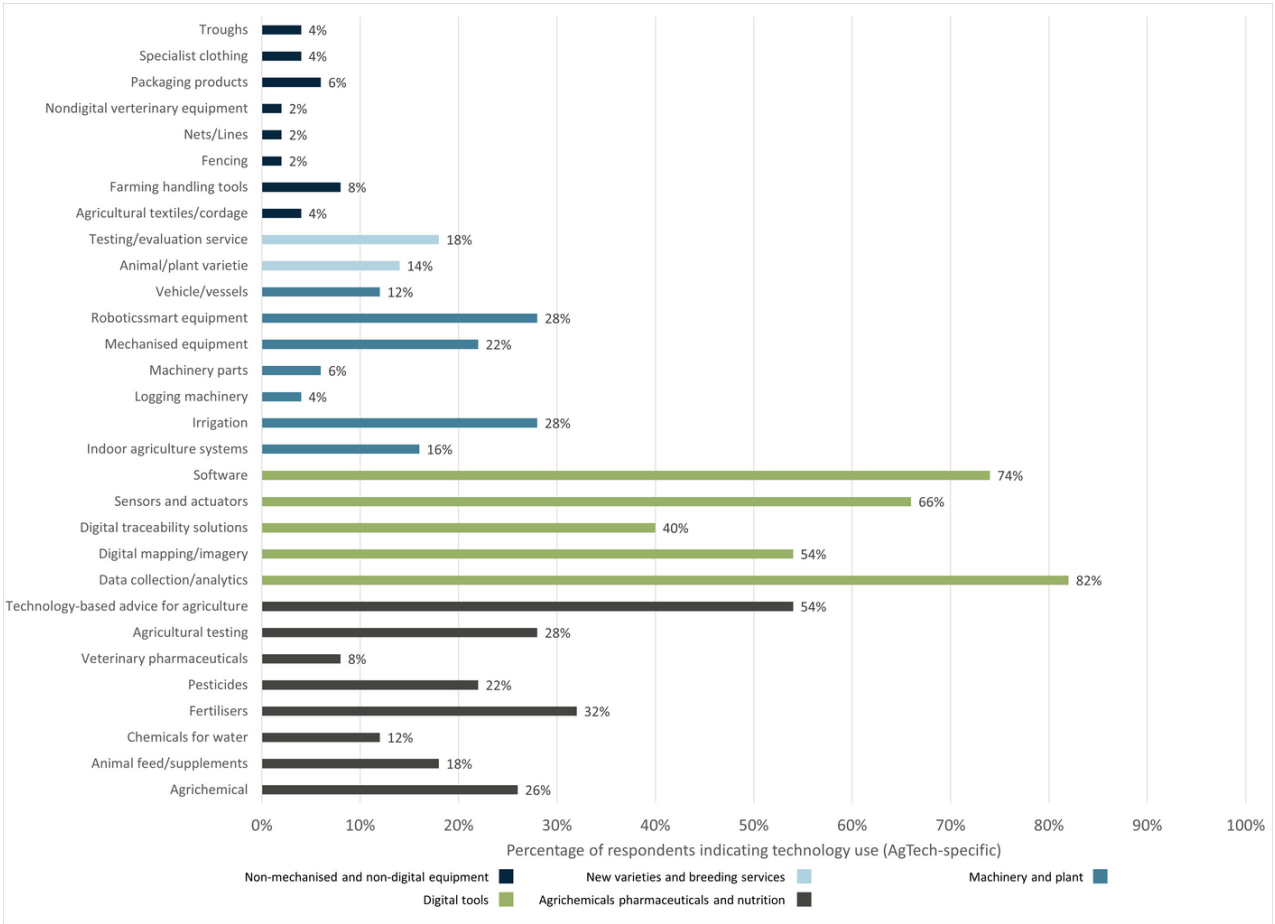
Technology was considered based on its **application**, such as software apps or drones, the **sector** such as SpaceTech or HealthTech, and **type** such as blockchain or artificial intelligence. Software application were part of 70% of respondents technology portfolio, followed by sensors and sensing systems (60%), internet of things (58%), data analytics (56%), and artificial intelligence (54%).



Agriculture Specific Technology

The survey also considered technology based on a taxonomy from the New Zealand Ministry, Innovation & Employment (Ministry of Business, Innovation & Employment, 2021). The taxonomy is informed by global approaches including Israel's Start-Up Nation, the United States Studies Centre at UTS Australian AgTech report, Finistere Ventures AgTech report taxonomy, AgFunder AgriFood Tech Investing Report, and the UK Agri-Tech Industrial Strategy: Evaluation Scoping Study and Baseline (AgFunder, 2018; Department for Business, Innovation and Skills, 2016; Finistere Ventures, 2018; Maughan et al., 2018; Start-Up Nation Central, 2023).

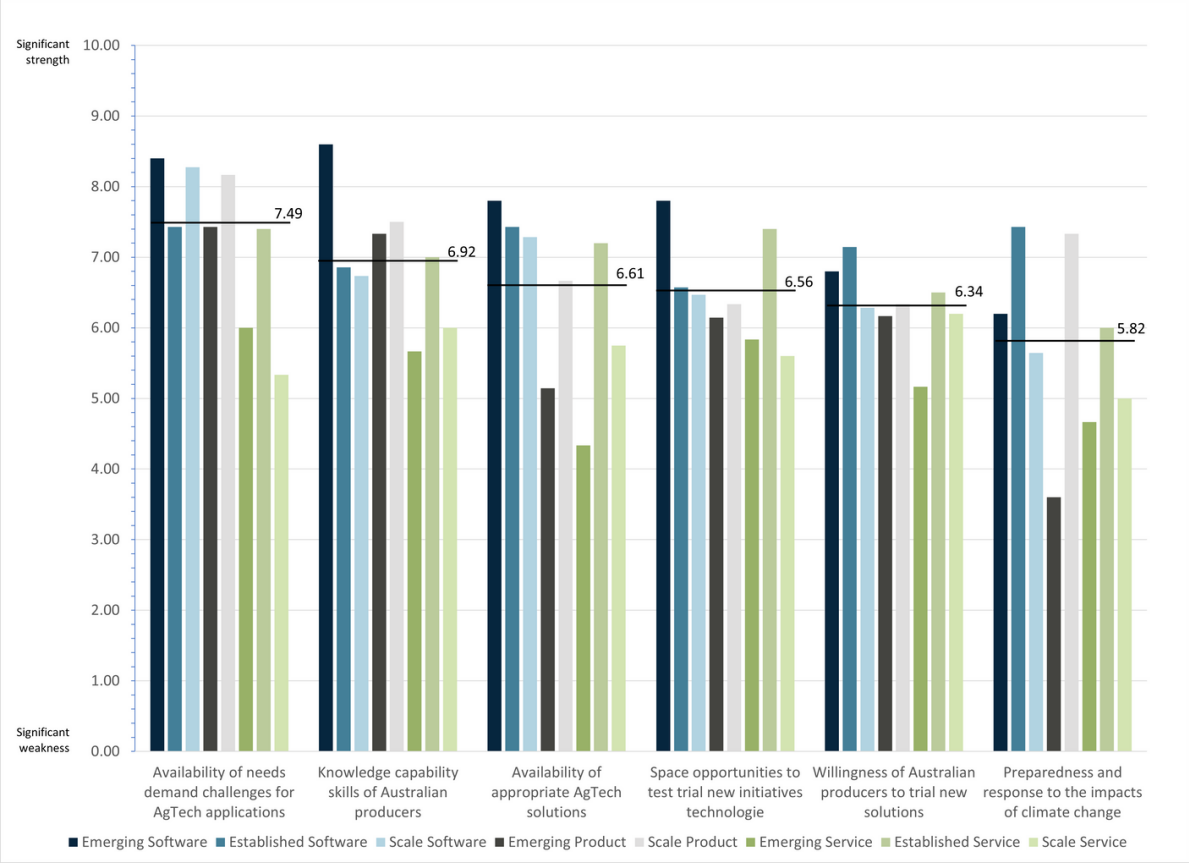
The use of technology based on the Agritech-specific taxonomy were similar to the results from the general technology categories. Digital tools were prominent in the responses, with over 80% applying data collection and analytics, 74% with software, and 66% providing and actuators.



STRENGTHS & WEAKNESSES, CHALLENGES, AND PRIORITIES

STRENGTHS & WEAKNESSES

When considering strengths and weaknesses of the Agritech sector in Australia, respondents felt there were adequate needs, demands, and challenges for Agritech applications and knowledge and capability of producers. Lower rating aspects of the Australian Agritech ecosystem include space and opportunities to trial new initiatives and technologies, availability of appropriate Agritech solutions, and willingness of producers to trial new solutions. Lowest of the aspects was Australia's preparedness and response to the impacts of climate change.



> Growers are keen to adopt but tend to have overly simplistic views on how a technology will be adopted on a farm."
> - *Emerging robotics provider*

> Most on-farm innovation is incremental. Central to integrating with agriculture at the production level is being laser focused on the farmer's margins and what is driving their decisions.
> - *Scaling service company*

> Lack of trust in solutions is a big problem as businesses have been used as test subjects."
> - *Scaling software company*

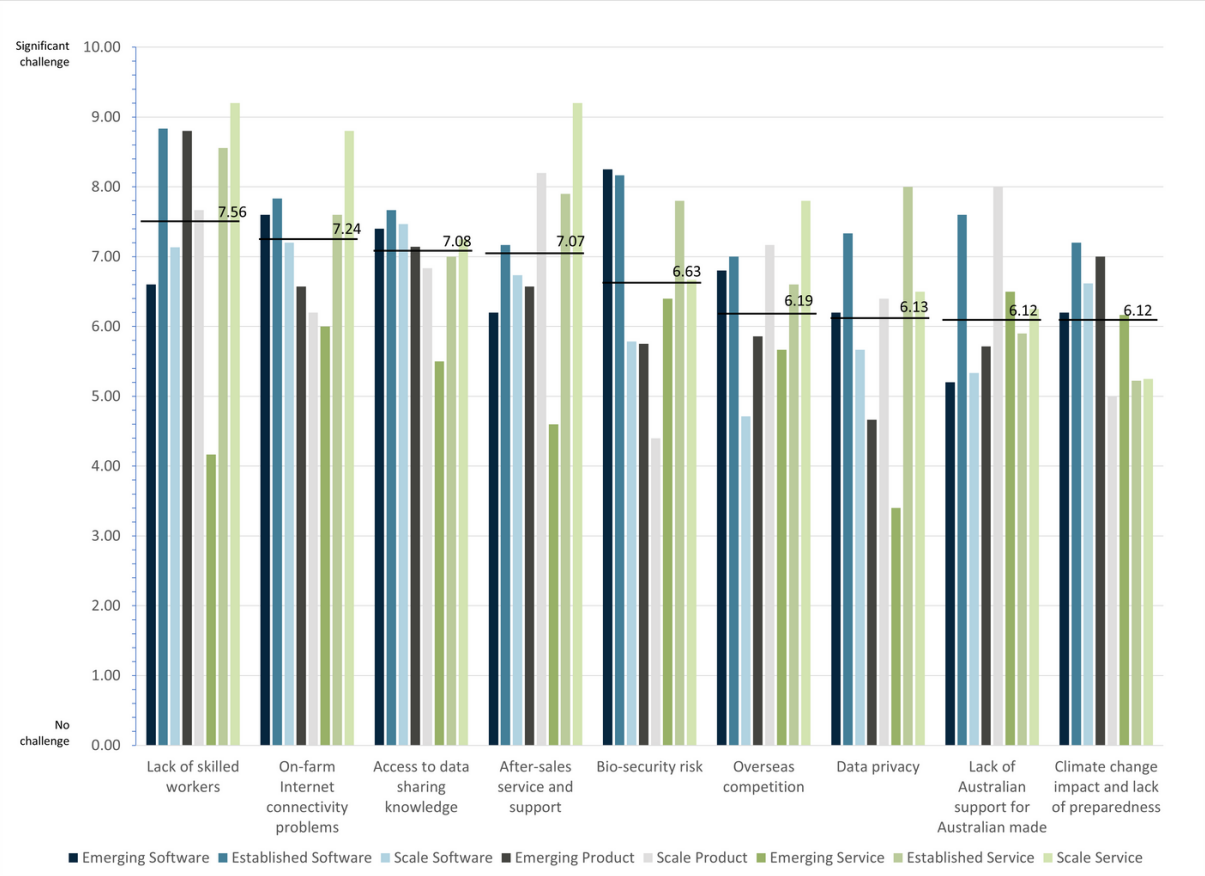
> Customers seem to be very willing but expect a level of technical and operational maturity.
> - *Emerging service company*

> A lot of agritech start-ups are driven by people who don't understand the daily tasks that farmers complete, so they miss critical details."
> - *Emerging product company*

> Farmers have been burnt with the promise of agritech and what it can deliver, hence they are skeptical of new suppliers."
> - *Scaling software business*

CHALLENGES

When considering the challenges to the development and application of Agritech in Australia, the highest rated challenge was a lack of skilled workers. This was followed by on-farm connectivity, access to data and sharing knowledge, after sales service and support, and bio-security risk. The lowest rated challenges include overseas competition, data privacy, lack of local support for Australian made, and climate change impact and lack of preparedness.



> Challenges are based around a geographically dispersed customer base."
> - *Scaling service company*

> Growers need a medium where they can collaborate with one another and be prepared to share production and financial data and use that information for the betterment of the Ag industry."
> - Established service company

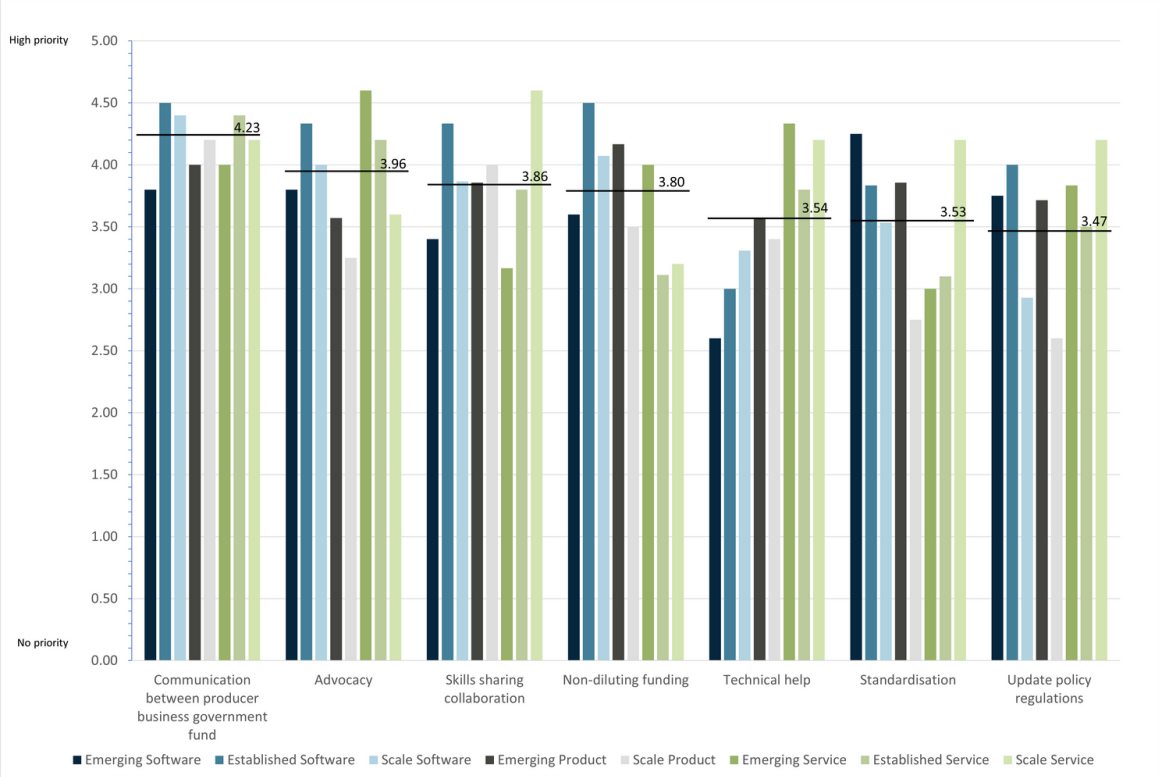
> More programs needed to train and teach technicians/engineers to program, build and maintain field robots without requiring them to do a PhD."
> - Emerging service company

> Market maturity is a challenge. Agritech companies bring new solutions/products to market. It is harder to get adoption with a new product over improvement on existing product. Agritechs struggle to get enough funding and hire engineers or scientists over a marketing manager.
> - Emerging product company

> Same challenges as any agriculture input or support industry. Distance, lack of skilled staff and lack of willingness to work in rural areas.
> - Scaling software company."

PRIORITIES

Respondents were asked to consider priority areas of focus to address challenges and weaknesses and take advantage of the strengths for Agritech in Australia. The top priority was communication between producer, business, government, and funding. This was followed by advocacy, skills sharing and collaboration, and non-diluting funding. Lower-rated priorities included technical help, standardisation, and updating policy regulations. Priorities varied based on the business stage and business model, with established software companies prioritising communication and non-diluting funds and emerging software companies prioritising standardisation. Emerging service companies were most likely to prioritise advocacy and technical help, while emerging product companies rated non-diluting funding and standardisation as the highest priorities.



> Government is not involved in agritech adoption - that's between a business and their customer. Government grant funding for sales and marketing FTE could be a gamechanger for Australian agritech. Government needs to be careful to not discourage overseas investment by presenting their lack of interest in a tech area as a "market signal"."
> *- Emerging product company*

> There needs to be more competitive collaboration that can lead to single solutions merging to offer greater value to customers."
> *- Scaling software company*

> Standardisation is another word for interoperability - and on far, this is a high priority for mechanically engineered solutions"
> *- Scaling service company*

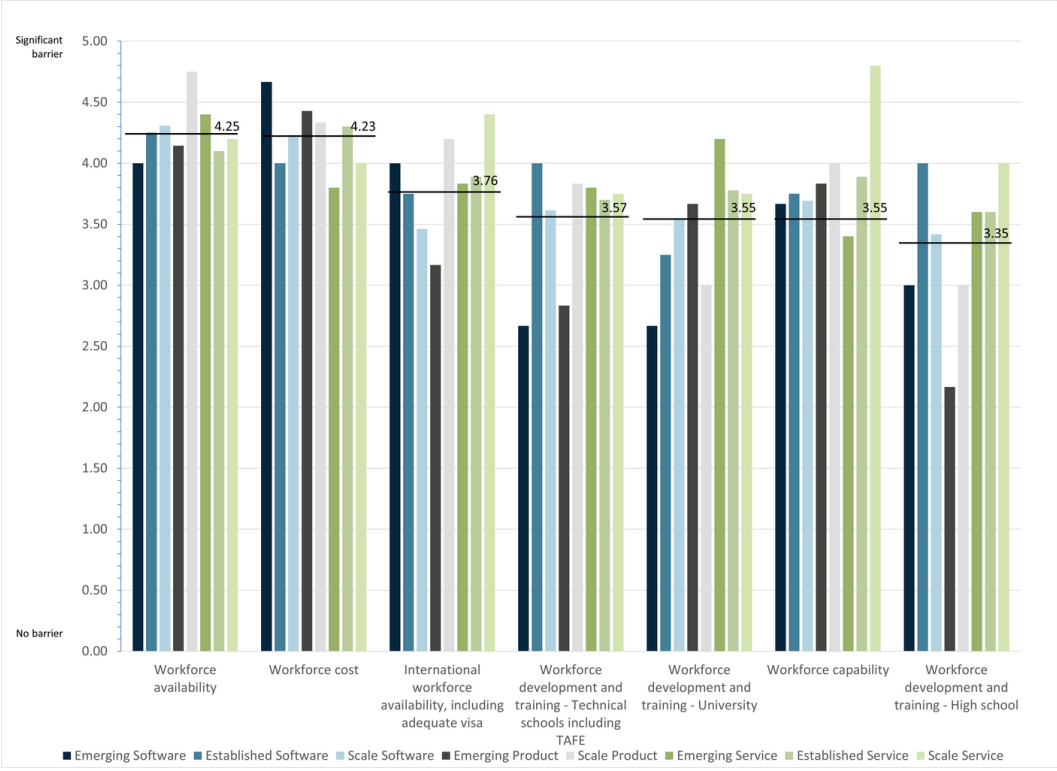
> The biggest inhibitor I've observed for Australian agritech companies is the lack of capital - particularly when compared to their competitors overseas who have access to both far more generous non-dilution grant funding (US specifically) as well as far more mature seed, early stage and VC funds."
> *- Established service company*

WORKFORCE

Workforce Challenges

Respondents were asked to consider challenges related to workforce in Agritech. The most significant barriers were workforce availability and cost, followed by international workforce availability including adequate visa requirements. Lower barrier aspects included workforce development and training through technical schools and university and related workforce capability. Lowest of the considered challenges was workforce development and training through high schools.

Scaling service companies rated workforce capability as the most significant barrier, scaling product companies highlighted workforce availability, and emerging software and product companies were most concerned about workforce cost.



> Most people between the age of 18-25 have some form of IT capacity. However the qualified ones seem to know a lot about irrelevant things. I get better value out of Maths' graduate than an Ag graduate."
> *- Emerging service company*

> Agriculture in general needs to have bigger emphasis in both primary and high school. Push the technology end and make it sound interesting."
> *- Emerging software company*

> There are no workers, this is something we all know, and its due to delays in visa applications"
> *- Emerging product company*

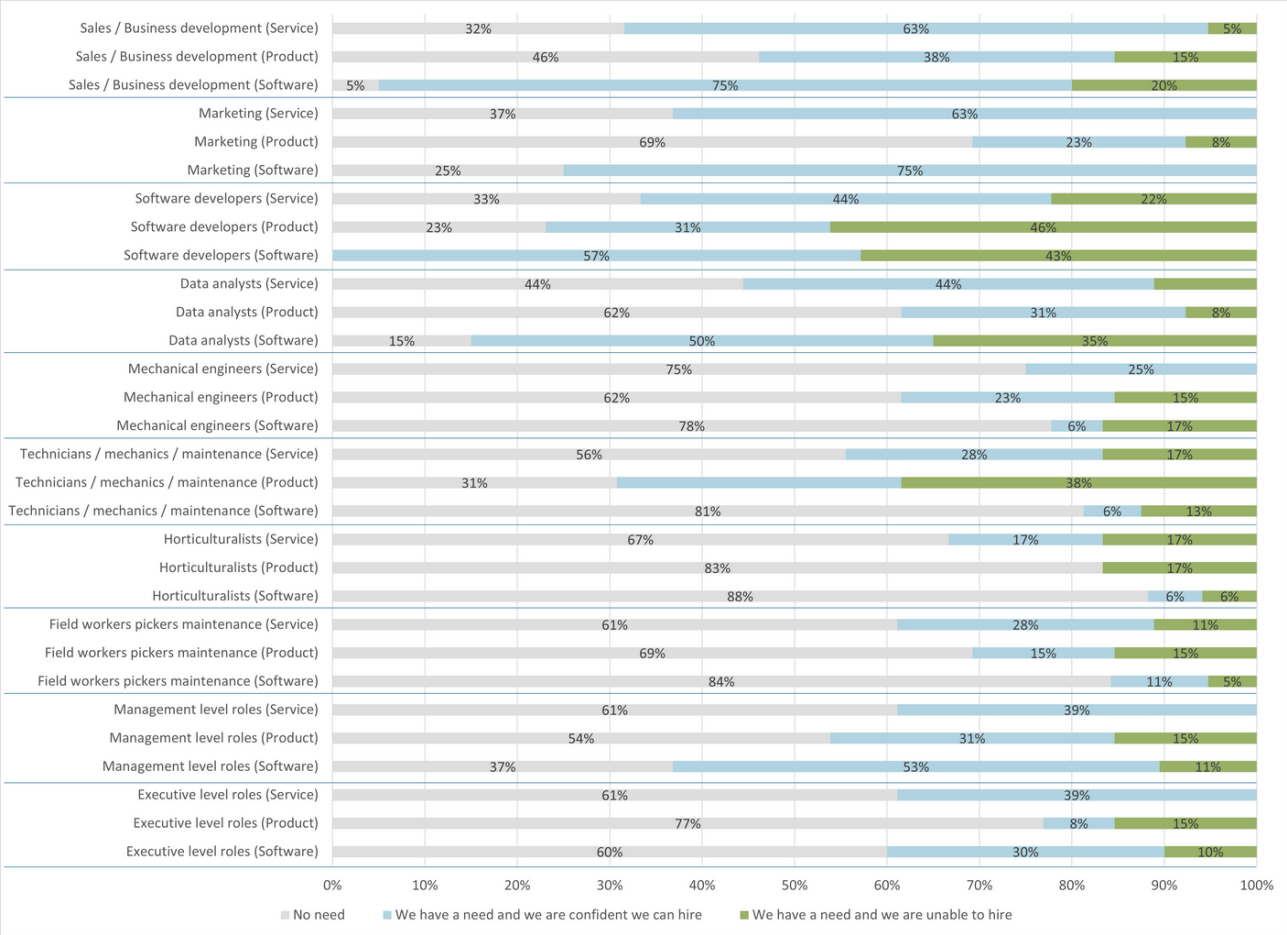
> We deliberately live in the city to be close to software engineering talent."
> *- Emerging product company*

> Agritech companies have to work out how to attract workforce away from other industries"
> *- Scaling product company*

Workforce Demand by Role

Respondents were asked about the need and availability of different positions. Sales and marketing roles are needed but also likely available. Software developers were needed by all software companies and nearly 80% of product companies. Over 40% of software and product companies were unable to fill resource requirements. Data analysts were also in high demand and difficult to source for 35% of software companies.

Product companies were more likely to need mechanical engineers and technicians, a need that 38% were unable to fill. Service companies were more likely to need horticulturists and field workers. In terms of leadership positions, over half of software companies were looking for management position and nearly a third were looking for executive positions, with between 10% to 15% of software and product companies unable to fill the demand for leadership roles.



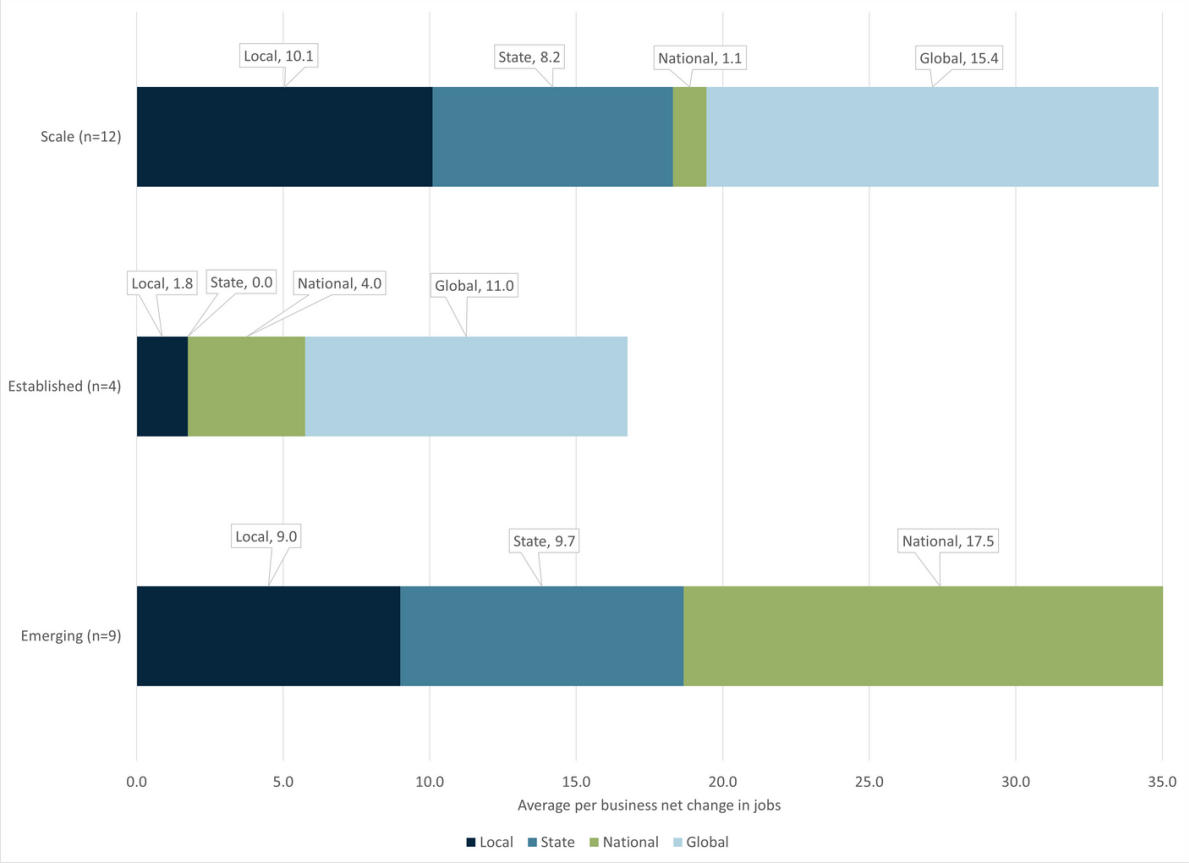
> We expect to be able to access the skills we need for the next 12 months. If things go well we may struggle. Software developers with useful knowledge of ROS development in C++ are hard to find."
> *- Emerging service company*

> We have experienced difficulties recruiting agronomists who have an interest in either agritech or developing an innovative agronomic service. Additionally, it can be a challenge to place qualified/graduated individuals in rural areas where jobs are available. "
> *- Established service company*

Future Workforce Projections

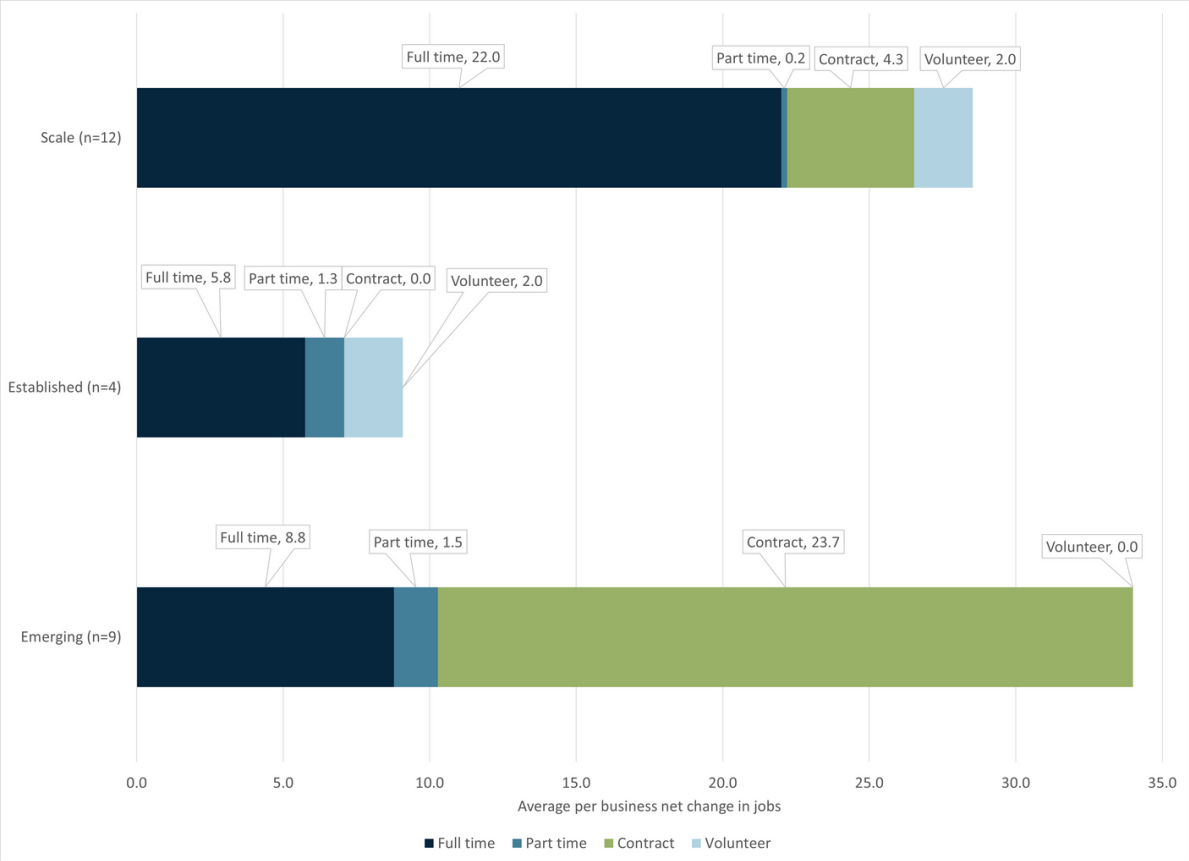
Employment growth is a sought-after indicator of sector size and potential, but not all forms of employment are equal in terms of economic impact and business sustainability. Respondents were asked to consider current and future workforce levels across 12 months based on geographic location (local in my region, outside my region but in my state, outside my state but in Australia, outside Australia) and employment status (full-time, part-time, contract, volunteer). The results are considered below using per-business average expected net change.

Expected employment growth for emerging and scaling businesses was close to the same in terms of total employee numbers, but the per-business increase was greater for emerging businesses. Emerging businesses were most likely to see an even distribution across local, state, national, and global employment with a slight emphasis on national employment. Scaling businesses were more likely to expect growth through global employees. Businesses identified as established were also more likely to grow through global employment and in some cases reduced staff counts in their state.



Future Workforce Projections (cont.)

When considering employment status, emerging companies were more likely to grow through contractors while scaling companies were more likely to grow through full-time employment. The use of part time employees was limited, with emerging companies projecting growth in part through conversion of current part time to future full time employment. Emerging companies also reported reduced counts of volunteers and interns through one-year growth, while established and scaling companies expected to use volunteers as part of their future staffing portfolio.

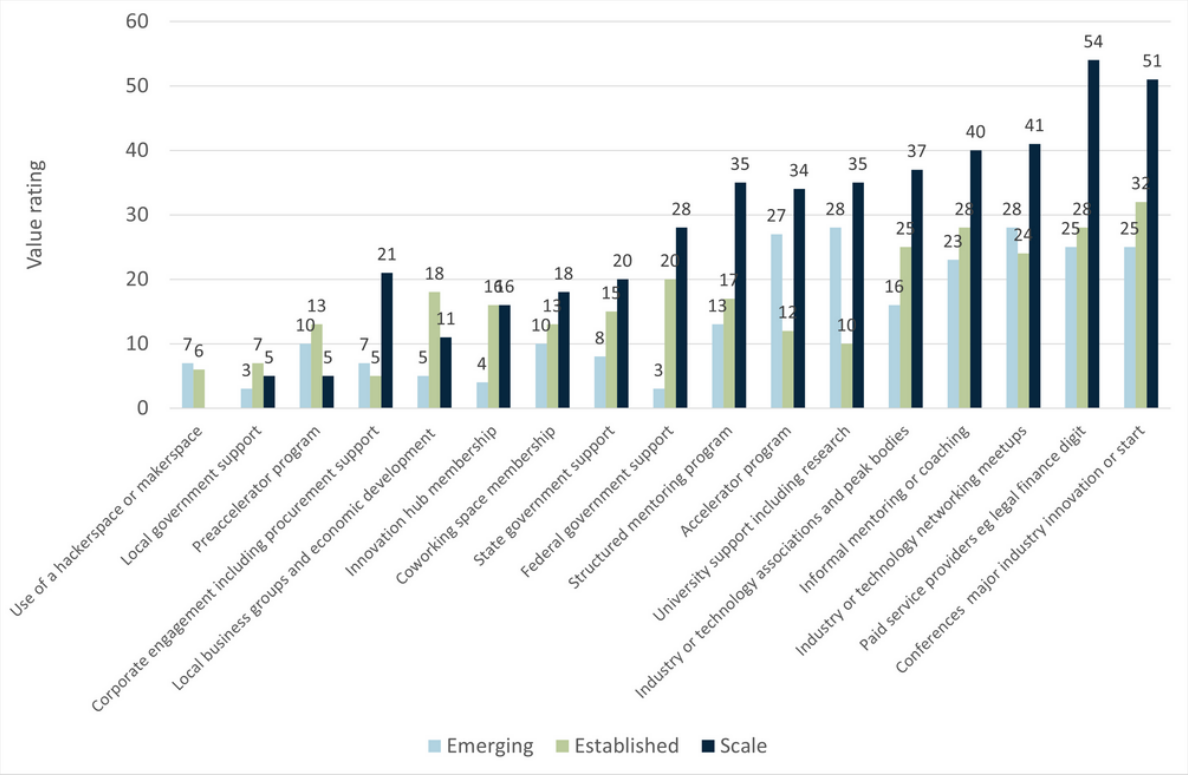


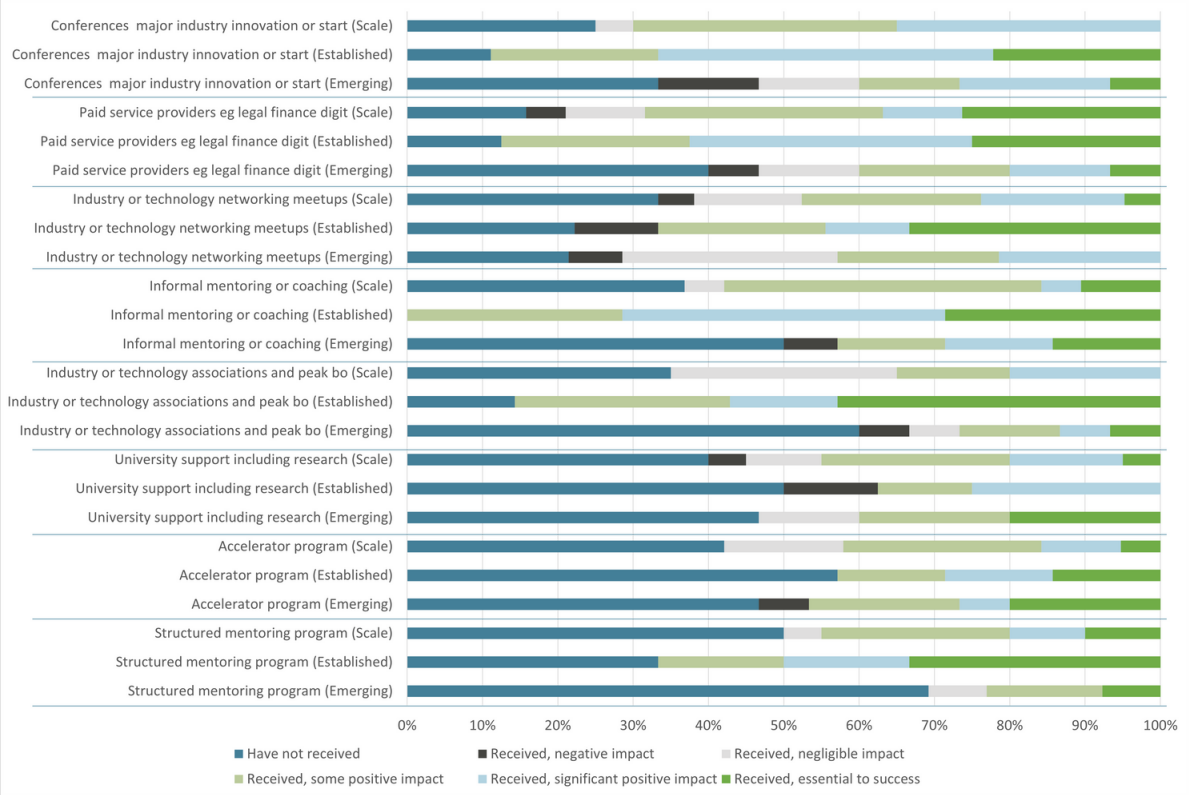
> We have doubled our workforce this year, but we also have offices overseas where we have more luck with software developers. Just finished recruiting our BD and marketing team in Australia. We have had great success in hiring 20+ scientists and lab assistants, but are struggling to attract roles to the region where our lab is. We have attracted management and exec roles from overseas to relocate in Australia."
> - *Emerging product company*

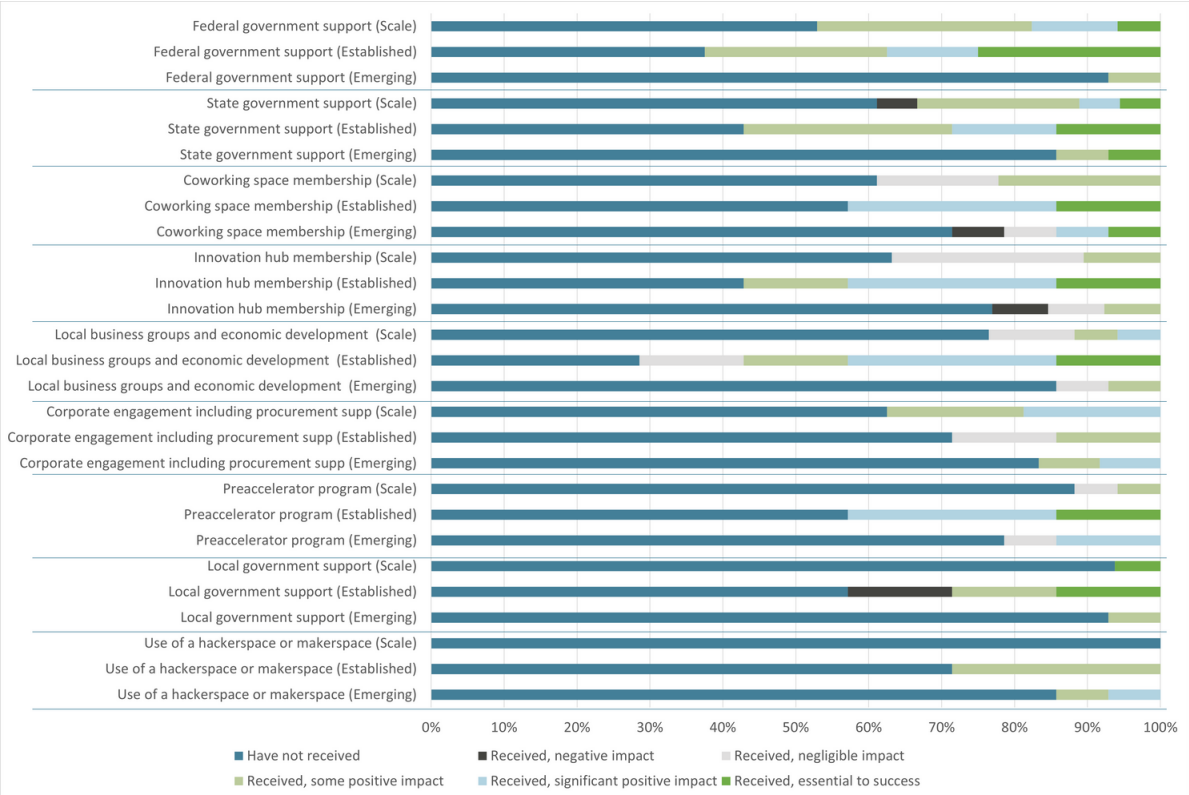
SUPPORT

Respondents were asked about types of support received and to what extent that support inhibited or enabled their success. Results were then considered based on the stage of the respondent. A value rating has been calculated based on responses to the value received.

Some functions were rated lower through not being used, such as scaling companies not leveraging hackerspaces or low use of local or federal government support by emerging businesses. Other support functions are impacted by negative impact ratings such as networking meetups, emerging company experiences with paid services, or established and scaling companies experience with universities.



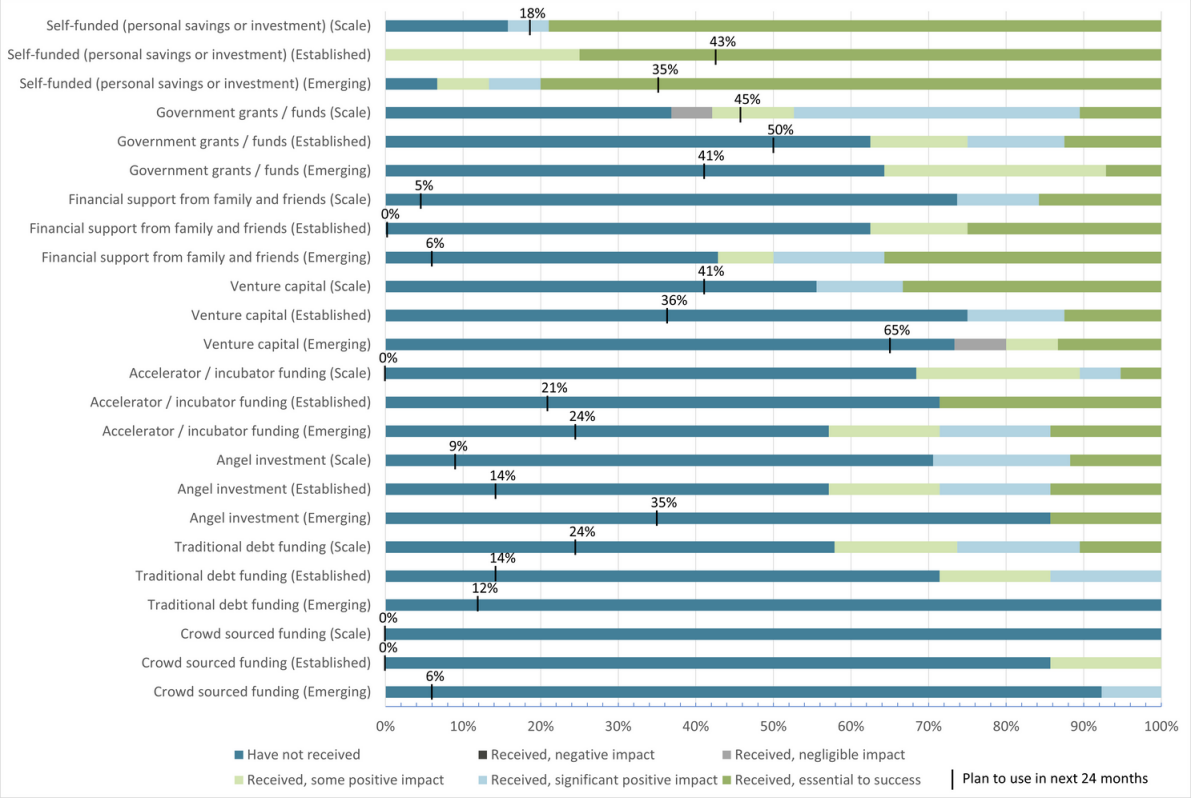

Conferences major industry innovation or start (Scale)
Conferences major industry innovation or start (Established)
Conferences major industry innovation or start (Emerging)
Paid service providers eg legal finance digit (Scale)
Paid service providers eg legal finance digit (Established)
Paid service providers eg legal finance digit (Emerging)
Industry or technology networking meetups (Scale)
Industry or technology networking meetups (Established)
Industry or technology networking meetups (Emerging)
Informal mentoring or coaching (Scale)
Informal mentoring or coaching (Established)
Informal mentoring or coaching (Emerging)
Industry or technology associations and peak bo (Scale)
Industry or technology associations and peak bo (Established)
Industry or technology associations and peak bo (Emerging)
University support including research (Scale)
University support including research (Established)
University support including research (Emerging)
Accelerator program (Scale)
Accelerator program (Established)
Accelerator program (Emerging)
Structured mentoring program (Scale)
Structured mentoring program (Established)
Structured mentoring program (Emerging)
0%
10%
20%
30%
40%
50%
60%
70%
80%
90%
100%
Have not received
Received, negative impact
Received, negligible impact
Received, some positive impact
Received, significant positive impact
Received, essential to success


Federal government support (Scale)
Federal government support (Established)
Federal government support (Emerging)
State government support (Scale)
State government support (Established)
State government support (Emerging)
Coworking space membership (Scale)
Coworking space membership (Established)
Coworking space membership (Emerging)
Innovation hub membership (Scale)
Innovation hub membership (Established)
Innovation hub membership (Emerging)
Local business groups and economic development (Scale)
Local business groups and economic development (Established)
Local business groups and economic development (Emerging)
Corporate engagement including procurement supp (Scale)
Corporate engagement including procurement supp (Established)
Corporate engagement including procurement supp (Emerging)
Preaccelerator program (Scale)
Preaccelerator program (Established)
Preaccelerator program (Emerging)
Local government support (Scale)
Local government support (Established)
Local government support (Emerging)
Use of a hackerspace or makerspace (Scale)
Use of a hackerspace or makerspace (Established)
Use of a hackerspace or makerspace (Emerging)
0%
10%
20%
30%
40%
50%
60%
70%
80%
90%
100%
Have not received
Received, negative impact
Received, negligible impact
Received, some positive impact
Received, significant positive impact
Received, essential to success

FUNDING

Respondents were asked about the funding received, to what extent that funding inhibited or enabled their success, and the types of funding they expected to pursue in the next 24 months. Results were then considered based on the stage of the respondent.

Self-funding, government grants, and friends and family were the most prominent forms of funding. Between 40% to 50% of respondents expecting to pursue government financial support in the next 24 months. Venture capital rated lower in terms of use but was expected to be sourced by 65% of emerging companies and 41% of scaling companies in the next 24 months.



> Agritech tends to suffer from seasonal metrics. Investors don't understand the industry. Hardware is a scary proposition for investors as they don't know it. Ultimately metrics talk, but hard technology has longer R&D times. Most investors are unwilling to have capital deployed for 1-3 years before sales occur."
> *- Emerging product company*

> People are doubtful but never ask questions to get more clarity. Instead, they ask to do further development, find customers to test, etc."
> *- Emerging product company*

> Retraction of traditional bank finance by imposing greater compliance and conditions for lending, restricting future improvements and expansion of the Agricultural Industry."
> *- Established service company*

> State based funding with varied requirements is difficult. No central portal to browse potential sources of funding."
> *- Emerging service company*

> There is too much focus on finding funding and not enough on selling product."
> *- Scaling product company*

CONCLUSION

CONCLUSION

Australia is a world leader in the commercialisation of Agritech ideas and innovations and because of this there is an entire ecosystem of world class Agritech companies based in all Australian states and Territories.

The Agritech ecosystem is essential to Australia's agriculture sector navigating an increasingly complex environment impacted by changes in global demand and consumer sentiment, climate-related impacts, global trade restrictions and opportunities, commodity prices, emerging high-value markets and products, workforce constraints, and food security.

As the industry continues to grow. it is vital the sector creates a shared advocacy voice for the Australian Agritech sector to facilitate the ecosystem to address the complex challenges raised. Workforce support is complex and requires a wider ecosystem approach to facilitate a better connection between all contributors. This includes incorporating a strong portfolio of financial capital options, inclusive of government funding, that are needed to support the range of emerging companies.

This report shows that the Australian Agritech ecosystem has matured, but proves that more work is needed to provide consistent access and high quality support of the industry. Themes from the report identify opportunities including:

1. Ensure policy, programs, and services for Agritech entrepreneurs and innovators provide support across the research and business life cycle and diverse needs of hardware, software, and service businesses.
2. Support Agritech workforce attraction, development, and retention through a multi-faceted approach involving government policy incentives, migration strategies, service provider and education provider support, customised for different company stages and business models.
3. Facilitate connections between Agritech providers and farming customers, building capability, capacity, collaboration, and trust with all roles including government, university, industry, technology providers, community groups, entrepreneur support organisations, and service providers
4. Develop a portfolio of financial capital options to support the range of emerging, established, and scaling Agritech companies with options that are consistent, reliable, trusted, and efficient to access.
5. Advocate for government Agritech support that is aligned and consistent to provide direct support through grants, funds, and activities as well as leadership and direction for systemic change.
6. Build the underlying Agritech support system including technical advisory services, manufacturing capability, and boundary-spanning functions to develop capability and capacity and strengthen the network.
7. Provide a shared voice supported by research and data for the Australian Agritech sector to facilitate the ecosystem in addressing the complex challenges raised in this report.

THANK-YOU

This report was prepared by Dr Chad Renando, Research Fellow (Innovation Ecosystem) with the Rural Economics Centre of Excellence, Startup Status CEO, and Global Entrepreneurship Network Australia Managing Director.

Chad was assisted by Charlie Simpson and Meg Lovegrove from the Australian Agritech Association.

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