



STRATEGIC RD&E PLAN

2018–2023



Australian Government
**Cotton Research and
Development Corporation**



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CRDC’s Strategic RD&E Plan 2018–23 snapshot

Our purpose

Investing in world-leading RD&E to benefit Australia’s dynamic cotton industry.

Our vision

CRDC: Powering the success of Australian cotton through world leading RD&E.

Our outcome statement

Increased economic, social and environmental benefits for the Australian cotton industry, and the wider community, by investing in knowledge, innovation and its adoption.

GOALS



Increase productivity and profitability on cotton farms



Improve cotton farming sustainability and value chain competitiveness



Build adaptive capacity of the cotton industry

KEY FOCUS AREAS

- Optimised farming systems
- Transformative technologies
- Protection from biotic threats and environmental stresses
- Sustainability of cotton farming
- Create higher-value uses for cotton
- Measurement and reporting throughout the value chain
- Science and innovation capability, and new knowledge
- Futures thinking

ENABLING STRATEGIES



Strengthening partnerships and adoption



Driving RD&E impact

KEY FOCUS AREAS

- Partnerships and collaboration
- Best practice (*myBMP*)
- Innovation and commercialisation
- Impact and effectiveness



About this plan

Setting an ambitious direction for CRDC impact through investment in cotton RD&E from 2018 to 2023

This Strategic Research, Development and Extension (RD&E) Plan 2018–23 is the Cotton Research and Development Corporation's (CRDC) primary planning document and provides a high-level overview of our strategic direction.

The Strategic Plan is unashamedly ambitious and sets out our vision, goals, investment approach and planned impacts for the next five years.

CRDC's aim through this Strategic Plan is to contribute to creating \$2 billion in additional gross value of cotton production for the benefit of Australian cotton growers and the wider community.

CRDC will push to take RD&E further forward to firmly secure a more innovative, profitable, sustainable and dynamic Australian cotton industry.

The initiatives in this Strategic Plan will position Australian cotton as a world-leading investor in RD&E and a key contributor to a globally competitive and responsible cotton industry.

Achievement of our measures of success will demonstrate advances in key focus areas, the contribution to collective improvements made by the Australian cotton industry as well as benefits to the economy and the broader community.

We thank all those who contributed to the development of this Strategic Plan, and particularly acknowledge our key stakeholders: The Australian Government, through the Minister for Agriculture and Water Resources; The Department of Agriculture and Water Resources; Cotton Australia, the cotton industry's representative organisation; and Australia's cotton growers, including Cotton Grower Associations.

This Strategic Plan has been prepared in accordance with the Primary Industries and Research and Development (PIRD Act) 1989, the Public Governance, Performance and Accountability Act 2013 (PGPA Act) and the 2015–19 CRDC Funding Agreement with the Australian Government.



By 2023, CRDC aims to contribute to creating \$2 billion in additional value by investing in RD&E to:

- increase productivity and profitability on Australian cotton farms,
- improve cotton farming sustainability and value chain competitiveness,
- build the adaptive capacity of the Australian cotton industry,
- strengthen partnerships and adoption, and
- drive RD&E impact.

increase // improve // build // strengthen // drive



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World-leading RD&E

The Australian cotton industry is an agricultural success story. A culture of innovation within the industry, which embraces RD&E, has been a major contributor to this success.



OUR ROLE

CRDC's role is to invest in and manage a portfolio of RD&E on behalf of the Australian cotton industry and Government. These investments are designed to enhance the economic, social and environmental contribution of cotton, for the benefit of cotton growers, the wider cotton industry, regional communities and the Australian public.

Based in Narrabri, New South Wales, CRDC is a statutory authority established in 1990 under the PIRD Act. We are funded through a grower levy and matching Commonwealth contributions.



Shanna K. Whan

Purpose

Investing in world-leading RD&E to benefit Australia's dynamic cotton industry.

Vision

CRDC: Powering the success of Australian cotton through world-leading RD&E

Outcome statement

Increased economic, social and environmental benefits for the Australian cotton industry, and the wider community, by investing in knowledge, innovation and its adoption.

Industry role and partners

Collaboration underpins our investment strategy: from regional activities and cotton-industry specific ventures, to national cross-sectoral partnerships and international relationships.

We partner with growers to identify RD&E priorities via the Cotton Australia research advisory panels; with researchers and research organisations on the delivery of RD&E projects; with Cotton Australia on the industry's best practice program, *myBMP*, and national sustainability initiatives; with Cotton Australia and Cotton Seed Distributors (CSD) on the joint extension program, CottonInfo; and with our fellow rural research and development corporations on cross-sectoral projects.

Importantly, there are also areas where CRDC remains informed, but does not need to strategically invest, as the industry is well served through our partners. One such example is plant breeding. CRDC was historically the major investor in the CSIRO plant breeding program, however today, Cotton Breeding Australia (a partnership between CSD and CSIRO) supports breeding and research. Similarly, education programs for the cotton industry do not require CRDC investment as this area is successfully delivered by Cotton Australia.

OUR OPERATING ENVIRONMENT

Where our industry is now – and the drivers likely to affect our future

Australian cotton industry

The Australian cotton industry is an agricultural success story. A culture of innovation and collaboration within the industry, which embraces RD&E, has been a major contributor to this success.

Our industry operates in a continually changing domestic and global setting, which presents great challenges and opportunities. As a forward-looking industry, we recognise changing societal expectations and respond accordingly.

With a commitment to continuous improvement in on-farm practices, Australian cotton growers have become world leaders in resource-use efficiency and reducing the environmental footprint of cotton production. CRDC's RD&E plays a critical role in this.

The impact of some RD&E investment for the Australian cotton industry is easy to see and measure, such as our world-leading cotton yields and quality, efficiency gains in water use and reductions in pesticide use. Other RD&E investment outcomes are less tangible but no less essential, for example the industry's commitment to improving its practices for controlling insects, and managing diseases such as Fusarium wilt.

This Strategic Plan responds to our understanding of where the Australian cotton industry is now and where we want to be in the future by setting the agenda for RD&E outcomes to deliver impact across the value chain.



CSIRO

Australian cotton industry in 2018

Australian cotton...



IS PRIMARILY GROWN FOR ITS FIBRE - HOWEVER COTTON SEED IS AN IMPORTANT BY-PRODUCT OF COTTON PRODUCTION



is the highest yielding, finest and cleanest cotton in the world



is produced to the highest environmental standards

IS ONE OF THE TOP FOUR GLOBAL COTTON EXPORTERS



exports over 99% of the crop



generates an average of \$1.9 billion in export revenue each year

RESULTED IN 4.2 MILLION BALES IN 2016-17, FROM 500,000 PLANTED HECTARES (THE LARGEST CROP IN FIVE YEARS)



Is supported by CRDC through an average annual RD&E investment of \$20 million



achieves yields more than three times the world average

is grown on over 1400 cotton farms, employing up to 10,000 people across 152 regional communities






is grown in Queensland, New South Wales and Victoria, with commercial field trials underway in the Northern Territory and Western Australia

Sources: CRDC Annual Report 2016–17, Cotton Australia Annual 2017, ABARES Agricultural Commodities Report.

Drivers

In response to input from the cotton industry and the Australian Government, CRDC identified 10 drivers likely to affect the cotton industry and our operating environment over the five-year life of this Strategic Plan, and beyond.

The 10 drivers are political, economic, social, technological, legislative and environmental factors that could change the context in which our industry operates.

Driver	Impact
Advances in technology 	<p>Technology advances in artificial intelligence, robotics, 3D printing and blockchain systems are having an impact on society and the economy. Uptake of new digital technologies, genetic science and synthetic biology are set to influence the way fibre products are made and transported in the future.</p> <p>More growers are using digital technology and data to make on-farm decisions, through easier access to risk and farm management tools, crop information and supply chain management systems.</p>
Production risks 	<p>A range of risk factors could impact cotton production including biosecurity breaches, insect resistance, climate change, trade, consumer expectations, biodiversity threats, farm land availability and declining resources.</p> <p>Growers are managing and minimising production risks by using new cropping tools, climate mapping data, and tracking market changes.</p>
Energy costs 	<p>Global awareness about the need to move from finite energy sources towards more renewable energy sources is driving change in energy sources, consumption and cost.</p> <p>Growers are aiming to become more energy efficient and are exploring new ways to store and use less energy resources.</p>
Future workforce 	<p>The work that people do and workforces are changing. Digital technology, device connectivity and platform economics mean the workforce skills bar is rising and expectations are shifting. Availability of sufficient people with the skills needed for a future cotton industry is critical to the success and viability of cotton.</p> <p>Labour productivity is improving with workers using new technology and systems to speed up production and reduce intensive, low-skilled work practices. The cotton industry invests heavily in training and upskilling the workforce for the future.</p>
Greater complexity 	<p>Farm businesses are becoming more complex, with more reporting and accountability needed throughout the value chain.</p> <p>The cotton value chain is becoming increasingly complex and will be challenged by on-farm business models, production systems and risk management.</p>



Informed markets



Information-empowered consumers have expectations for health, provenance, sustainability and ethics. Traceability and transparency, sustainability credentials and trust (underpinning the concept of social licence) will be critical considerations for cotton customers. The cotton industry also faces decreasing market share due to the competitiveness of man-made fibres.

The cotton value chain is being transformed by new technologies, such as the digitisation of supply and augmented reality, that have the capacity to make it more integrated, profitable and sustainable.

Pressure for improved productivity & resource use



Agricultural industries are increasingly required to produce more with less reliance on resources and to better account for the use of production inputs.

The cotton industry will continue to demonstrate its environmental credentials through the sustainability of its production systems and management of resources.

Sustainability



Climate change and environmental impacts, such as loss of biodiversity, have the potential to reshape the risk profile of agriculture.

Natural capital accounting of the soil, air, water, biodiversity and land used for food and fibre production globally recognises that environmental systems play a fundamental role in, and can have a major impact on, economic outputs and social licence.

Volatility



Production continues to vary due to seasonal conditions and export demand. Volatile exchange rates, market trading and changing consumer preferences can impact cotton production.

The cotton industry continues to monitor changes in customer expectations and to build market demand for natural cotton fibres.

Water



Global demand for water for food production will increase due to climate change, population growth and changes in diet, potentially impacting water availability and usage for non-food crops.

Improving water use efficiency with best management practices continues as a major priority across the cotton value chain.

Impact of drivers on cotton value chain

CRDC mapped how the 10 drivers impact on the Australian cotton value chain.



Advances in Technology



Production Risks



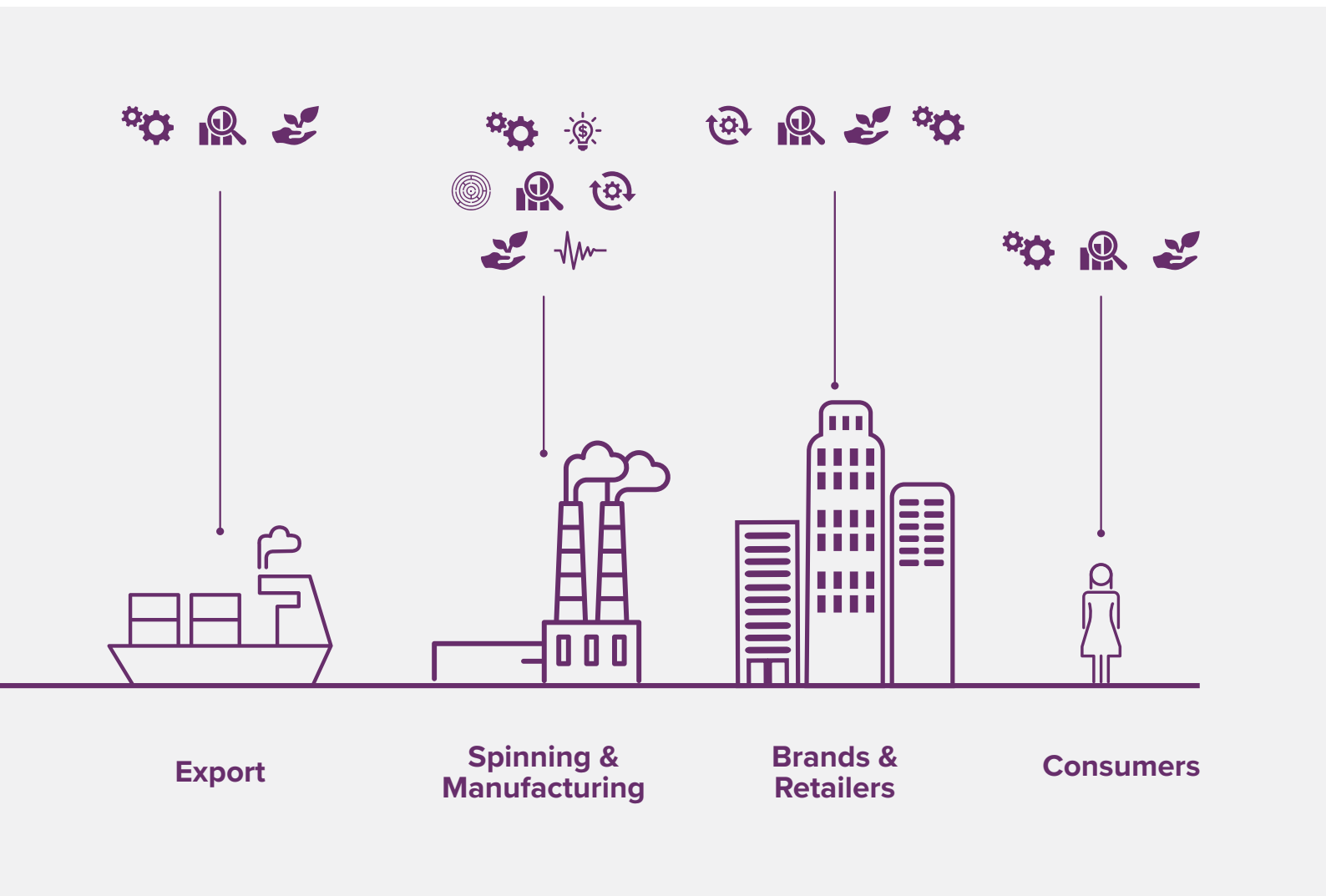
Energy Costs



Future Workforce



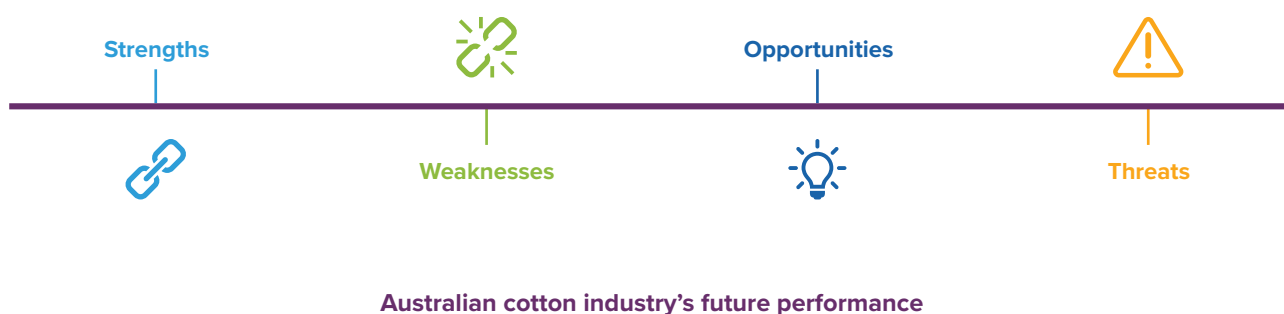
Greater Complexity



- Informed Markets:** Icon of a magnifying glass over a bar chart.
- Pressure for Improved Productivity & Resource use:** Icon of a gear with circular arrows around it.
- Sustainability:** Icon of a hand holding a growing plant.
- Volatility:** Icon of a heartbeat line.
- Water:** Icon of a water droplet.

Situational analysis

CRDC analysed the current industry operating environment to identify the strengths, weaknesses, opportunities and threats that may affect the Australian cotton industry's future performance.



Strengths

- Culture of innovation
- Dedicated extension resource
- Geographic diversity
- High cotton yields and quality
- Longstanding commitment to research through industry and government partnership
- Progressive and responsible leadership
- Rapid adoption of knowledge and technology
- Relatively highly skilled workforce

Opportunities

- Adoption of new technology and data platforms
- Expanding Asian markets
- High value uses for recycled cotton and participation in the circular economy
- Industry growth
- New market uses and partnerships

Weaknesses

- Communication and transport infrastructure
- High reliance on inputs of fertiliser, energy, chemicals and water
- Impact of climatic variability on production
- Reliance on public RD&E
- Shortage of labour
- Volatility in production and supply

Threats

- Biosecurity incursions
- Climate change
- Community expectations for production and use of resources (social licence)
- Competition for natural resources for food production
- Competition from man-made fibres
- Declining viability of rural communities
- Government policy in key export markets
- Increasing pressure for more sustainable production
- Lack of succession planning
- Pest resistance to controls
- Rising energy costs
- Water scarcity



Consultation

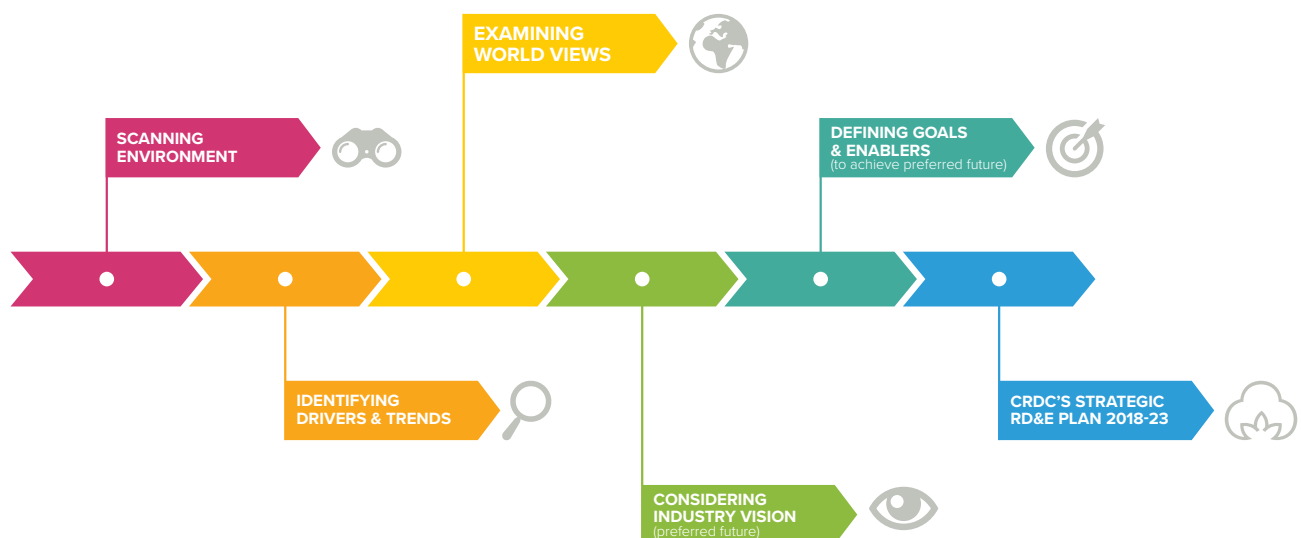
CRDC’s Strategic RD&E Plan 2018–23 was developed through extensive consultation, using a formal strategic foresighting process, in partnership with the following stakeholders:

- Australian cotton growers
- Cotton Australia, the Cotton Australia grower advisory panels and Cotton Grower Associations
- the Department of Agriculture and Water Resources and the Minister for Agriculture and Water Resources
- the Cotton Innovation Network and the Australian Cotton Industry Forum
- cotton research partners, including CSIRO, the NSW Department of Primary Industries, the Queensland Department of Agriculture and Fisheries, universities, the private sector, and
- other industry bodies and partners, including CSD, CottonInfo, Crop Consultants Australia, the Australian Cotton Shippers Association, and the Grains Research and Development Corporation.

The strategic foresighting process involved environmental scanning, identifying drivers and trends impacting our industry, examining world views and considering the cotton industry’s preferred future, including the cotton industry’s Vision 2029.

The outcomes from this comprehensive consultation shaped the framework for CRDC’s Strategic RD&E Plan 2018–23.

Consultation and Strategic Plan development process





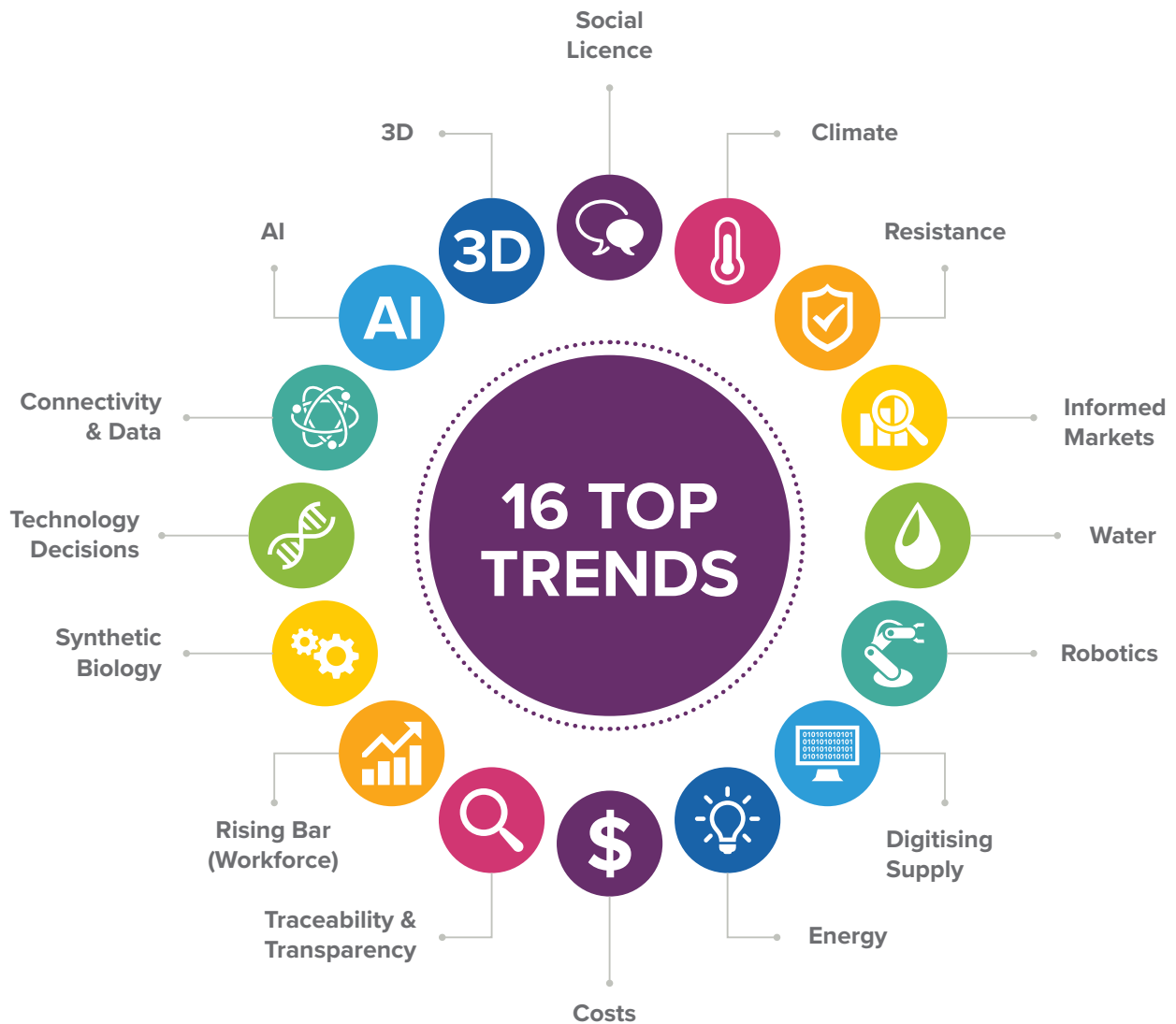
Consultation outcomes

Through the consultation process 16 trends were prioritised by our stakeholders, from over 60 concepts, as the most likely to impact the industry in the future – either as an opportunity or a challenge.

CRDC used these 16 top trends, as well as our understanding of the preferred future gained through the ‘futures thinking’ process and our industry’s operating environment, to develop the goals and enabling strategies that underpin this Strategic Plan.

Through a process of ongoing consultation with stakeholders, the plan’s framework of three goals and two enabling strategies was developed and confirmed.

The top 16 trends prioritised by our stakeholders align with the three Strategic Plan goals.





Trends

Artificial intelligence; Climate; Costs; Energy, Water; Connectivity and data; Robotics; Social licence; Resistance and Technology decisions.

.....

Digitising supply; Informed markets; Social licence; Traceability and transparency; and 3D printing.

.....

Artificial intelligence; Energy; Climate Connectivity and data; Rising bar (workforce); Robotics; Synthetic biology; and Water.

.....

Strategic Plan Goals



Increase productivity and profitability on cotton farms

.....



Improve cotton farming sustainability and value chain competitiveness

.....



Build adaptive capacity of the cotton industry

.....

In addition to informing the CRDC Strategic Plan, the outcomes gathered from this consultation process are supporting the development of other industry strategic plans: that of Cotton Australia, and of the industry's joint extension program, CottonInfo, of which CRDC is a founding partner.

OUR STRATEGY

CRDC's roadmap for a more innovative, profitable, sustainable and dynamic Australian cotton industry

This Strategic Plan builds on the success of the preceding five-year plan. It provides an ambitious roadmap for CRDC investment in world-leading RD&E that will benefit Australia's dynamic cotton industry.

With a strong focus on innovation and improving the industry's profitability and sustainability, the Strategic Plan is essential to the future of Australian cotton.

Three strategic goals and two enabling strategies are the foundation of the Strategic Plan. This Strategic Plan encapsulates CRDC's program framework, which is underpinned by a purpose-built evaluation framework.

GOALS: The long-term industry benefits our RD&E investments will contribute to through this Strategic Plan to achieve the cotton industry's vision.

ENABLING STRATEGIES: The areas of action that will underpin and support the delivery of our goals.

KEY FOCUS AREAS: The priority areas that we will invest in to achieve our goals.





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GOALS



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Improve cotton farming sustainability and value chain competitiveness



Build adaptive capacity of the cotton industry

KEY FOCUS AREAS

- Optimised farming systems
- Transformative technologies
- Protection from biotic threats and environmental stresses
- Sustainability of cotton farming
- Create higher-value uses for cotton
- Measurement and reporting throughout the value chain
- Science and innovation capability, and new knowledge
- Futures thinking

ENABLING STRATEGIES



Strengthening partnerships and adoption



Driving RD&E impact

KEY FOCUS AREAS

- Partnerships and collaboration
- Best practice (*myBMP*)
- Innovation and commercialisation
- Impact and effectiveness



Goal 1

Increase productivity and profitability on cotton farms

Why we need to increase productivity and profitability on Australian cotton farms

A successful Australian cotton industry plays an important role in ensuring Australia's future economic prosperity – and the sustainability of rural communities.

Cotton growing will continue to evolve. Whether change is driven by productivity constraints or environmental, economic or regulatory factors, the long-term profitability of cotton farming will rely on finding innovations and strategies that allow the cotton-farming system to adapt.

New technologies and the industry's capacity to innovate will help drive increased productivity and profitability of Australian cotton farms which is essential for Australia to remain competitive in the global market place.

Only by working together will we be able to safeguard our industry's leading position, long-term competitiveness and resilience.

Lifting productivity and profitability by \$1.5 billion across the board will reduce the gap between Australian cotton's top producers and the production average – and build a stronger and more sustainable industry.

Key focus areas and outcomes

To increase the productivity and profitability on Australian cotton farms by \$1.5 billion, CRDC will focus investments in RD&E to deliver optimised farming systems, adapt transformative technologies and protect our industry from biotic threats and environmental stresses.

Our investment priorities will help improve production yield, quality and input efficiencies, support sustainable on-farm development and strengthen the reliability of cotton production to **optimise our farming systems**.

RD&E will ensure that cotton growers benefit from the development (by third parties) and adaption of **transformative technologies** and are supported to increase their on-farm use of digital and emerging technologies.

CRDC's investments will increase our **protection from biotic threats** (pests, diseases and weeds) and **environmental stresses** (drought, extreme temperature, low rainfall and associated risks, e.g. spray drift) by improving surveillance, our understanding of the impacts, and sustainable and responsible management.

RD&E will assist the Australian cotton industry to not only responsibly manage known biotic threats but to increase our preparedness for biosecurity incursions.

The combined outcomes of these research priorities will support Australian cotton growers to increase their productivity and profitability long-term.

Activities

Optimised farming systems will be delivered by:

- Investigating and communicating the application of beneficial new on-farm technologies and scientific approaches
- Investing in real time monitoring, building adoption capacity and developing benchmarks, decision tools and practices to support on-farm resource efficiency decisions
- Testing and providing information on the social, environmental and economic viability of new farming systems
- Investigating the drivers behind farming system volatility and potential mitigations

Transformative technologies will be delivered by:

- Investigating and facilitating the development (by third parties) and adaption of beneficial new technologies and systems for cotton farms
- Working with partners to develop strategies to support digital applications and develop frameworks for digital agricultural tools in Australia

Protection from biotic threats and environmental stresses will be delivered by:

- Investigating and monitoring the economic, environmental and social impacts of biotic threats and environmental stresses
- Investigating and delivering new and improved tools, systems and strategies for the surveillance, prevention and sustainable and responsible management of biotic threats and environmental stresses
- Working collaboratively with growers and consultants to deliver industry-led biosecurity preparedness activities and address identified knowledge gaps



New technologies and the industry's capacity to innovate will help drive increased productivity and profitability of Australian cotton and agriculture.



Goal 1

Increase productivity and profitability on cotton farms

Measures of success

Key focus areas	Outcomes	Performance indicator
OPTIMISED FARMING SYSTEMS	Improved yield and quality	Increase in yield over 5 years
	Improved input efficiencies	Positive input/output ratios resulting from adoption of new practices
	On-farm sustainable development is supported	New farming systems are sustainable and productive
	Improved reliability of cotton production	Increase in five yearly average production
TRANSFORMATIVE TECHNOLOGIES	New technologies are adapted for use in cotton	Increased number of technologies are available for cotton growers
	Cotton farms are digitally enabled	Increase in on-farm use of digital technology
PROTECTION FROM BIOTIC THREATS AND ENVIRONMENTAL STRESSES	Increased understanding of the impact of pests, diseases and weeds, and environmental stresses	Impact information is available to inform improved management practices for growers and industry
	Improved identification, surveillance and management systems for pests, diseases and weeds, and environmental stresses	New management practices and systems are available for growers, consultants and industry
	Industry is prepared for a biosecurity incursion	Delivery of effective biosecurity preparedness scenarios/exercises (undertaken by cotton industry)



Measures	Benchmark	2023 target
Assessment of average bales/ha	9.86 bales/ha (irrigated) 4.0 bales/ha (dryland)	11.6 bales/ha (irrigated) 4.7 bales/ha (dryland)
Assessment of bales per unit input for irrigated cotton (water productivity and nitrogen use)	1.1 bales/ML (GPWI) 10 kg of lint/kg of nitrogen	1.32 bales/ML (GPWI) 11.5 kg of lint/kg of nitrogen
Number of bales produced on new farming systems	No benchmark	2 million bales
Rolling annual average production (number of bales)	3.4 million bales/year (5 year average)	3.9 million bales/year (5 year average)
Number of new technologies entering commercial use	1	5
Percentage of farms using digital technologies	100% connected to internet 46% devices linked to office	85% devices linked to office
R&D investments reflect the potential impact of biotic and environmental stresses to inform management practices	60%	85%
Economic impact of pests, weeds and diseases reduced by 40 per cent	No benchmark	40%
Number of biosecurity preparedness activities undertaken	No benchmark	2
Percentage of participants reporting increased preparedness	No benchmark	85%



Goal 2

Improve cotton farming sustainability and value chain competitiveness

Why we need to improve cotton farming sustainability and value chain competitiveness

It is essential that cotton farming sustainability and value chain competitiveness be improved, with CRDC collaboratively driving the agenda and research for sustainable production to boost competitive advantage for the Australian cotton industry.

Improved value chain competitiveness can be achieved by increasing the value of cotton, such as through developing higher-value uses and improving cotton product performance. An increased value for cotton will capitalise on farm production yields and maximise profits.

Understanding, improving and reporting on cotton's environmental and social footprint, and integrating systems to allow traceability throughout the value chain, will better fulfil market requirements and increase our market strength.

Improving value chain competitiveness and sustainability aims to derive \$0.5 billion in greater value for growers. It will also help achieve Australian cotton's ambition to be the highest yielding, finest, cleanest and most responsibly produced cotton in the world.

Key focus areas and outcomes

To collaboratively improve the **sustainability of cotton farming** and strengthen value chain competitiveness, CRDC will focus investments in RD&E that ensure Australian cotton continues to be produced to the highest environmental and social standards, with an improved environmental footprint.

CRDC investments aim to **create \$0.5 billion of higher-value for cotton**. Our improved understanding of markets and trends will inform our response, and help identify opportunities across the Australian cotton value chain. CRDC will undertake economic research of the cotton value chain including production and post farm-gate operations. The analysis will identify key areas for innovation and improvement.

CRDC will invest in **measurement and reporting throughout the value chain** to create transparency, continuously adopt world's best practice, address emerging issues, and collaborate in global leadership for sustainability. This will ensure that market requirements for shared information needs are understood and acted upon.

Activities

Sustainability of cotton farming will be delivered by:

- Undertaking research on how to improve the most significant components of cotton's environmental footprint, including water and nitrogen management, native vegetation and soil carbon
- Understanding and informing the methodologies and metrics used to assess the footprint of raw materials and their value chains

Creating higher-value uses for cotton will be delivered by:

- Identifying opportunities for improving cotton product performance, and high-value uses for cotton
- Investigating market requirements and opportunities throughout the value chain, and communicating those to industry

Measurement and reporting throughout the value chain will be delivered by:

- Facilitating and participating in global sustainability forums
- Providing information to the value chain



**Helping achieve Australian cotton's
ambition to be the highest yielding,
finest, cleanest and most responsibly
produced cotton in the world.**



Goal 2

Improve cotton farming sustainability and value chain competitiveness

Measures of success

Key focus areas	Outcomes	Performance indicator
SUSTAINABILITY OF COTTON FARMING	Improved environmental footprint for cotton farms	Increase in sustainability metrics and improved carbon footprint
CREATE HIGHER-VALUE USES FOR COTTON	Increased value for Australian cotton	Increase in the number of new commercialised products
	Increased understanding of market requirements and opportunities throughout the value chain	Information is publically available on market requirements and value chain opportunities
MEASUREMENT AND REPORTING THROUGHOUT THE VALUE CHAIN	CRDC collaborates in global leadership for sustainability initiatives	Evidence of involvement in global initiatives
	The value chain is transparent and understood by participants to improve market opportunities	Economic and sustainability implications of transparency throughout the value chain are published and understood



Measures	Benchmark	2023 target
Percentage of farm native vegetation managed for conservation	6%	6.6%
Carbon footprint (kg/CO ₂ e)	383 kg of CO ₂ e per bale	325 kg of CO ₂ e per bale
Number of new commercialised products	No benchmark	2
CRDC research identifies opportunity to increase the value of cotton by 25 per cent	No benchmark	25%
Number of global initiatives participated in	4	6
Reports and sustainability information published	1	3



Goal 3

Build adaptive capacity of the cotton industry

Why we need to build the adaptive capacity of the Australian cotton industry

The Australian cotton industry is in an era of significant change with rapid advances in technology transforming the way we farm and undertake research. The environment in which we operate also poses challenges, with climate variability and natural capital constraints testing the resilience of our farming systems.

It is essential that we maximise the opportunities afforded by the agricultural technology revolution and minimise the disruptions posed by climate variability and natural capital constraints. To do this, the Australian cotton industry needs to enhance our scientific research capability, acquire new talent and facilitate the local and global exchange of ideas required to strengthen our adaptive capacity. This will ensure we are prepared and ready to respond to the changing environment.

Building adaptive capacity will enable the industry to achieve its future vision and allow Australian cotton to innovate and find solutions to existing and new problems – and bring those innovations to the marketplace more rapidly.

It will also allow our industry to take a leading role in investing in cotton research and innovation internationally.

Key focus areas and outcomes

To build the adaptive capacity of the Australian cotton industry and enable the industry to achieve its future vision, CRDC will focus RD&E investments to deliver **science and innovation capability, and new knowledge** and facilitate **futures thinking**.

Our investments will ensure the science and innovation capacity of Australian cotton is strengthened and strategically fit for a changing and digital future.

CRDC RD&E investments will tap into the depth and diversity of industry knowledge and ability across regional communities to unearth opportunities for problem solving and innovation.

In addition, we will provide our industry stakeholders with opportunities to develop and advance innovation skills. CRDC RD&E investments will prepare Australian cotton growers for our changing environment and provide them with the skills to adapt to those changes.

CRDC will also invest to enhance strategic foresighting. This will allow our industry to respond and adapt to possible future eventualities – and safeguard the ecological health that is essential to the cotton economy.

Activities

Science and innovation capability, and new knowledge will be delivered by:

- Facilitating and participating in global initiatives, supporting researchers to use new technologies and uses for data, and creating and facilitating opportunities for national and international RD&E exchange
- Investigating regional community demographics and available service providers and supporting opportunities for greater diversity in the cotton industry
- Working collaboratively with cross-sectorial partners to support regional innovation

Futures thinking will be delivered by:

- Assessing and monitoring grower resilience and on-farm natural capital, and supporting and communicating initiatives to address knowledge gaps
- Investigating existing and future markets for Australian cotton and communicating this to the industry



It is essential that we maximise the opportunities afforded by the agricultural technology revolution.



Goal 3

Build adaptive capacity of the cotton industry

Measures of success

Key focus areas	Outcomes	Performance indicator
SCIENCE AND INNOVATION CAPABILITY, AND NEW KNOWLEDGE	Science and innovation capacity is strengthened and strategically fit for a digital future	<p>Increase in the number of researchers supported through strategic career pathways</p> <p>Increase in the number of scientific exchanges</p>
	Increased understanding of and participation from the diverse human capital in regional communities	Information is available on the diversity of social and business networks (age, gender, roles, culture, range of service providers, occupations and skills)
	Increased opportunities for innovation skills development	Degree to which innovation is supported by CRDC
	Australian cotton growers are able to adapt to change	Growers report improved capacity to manage unknown or unexpected events (resilience)
FUTURES THINKING	Increased opportunities for strategic foresighting	Futures workshops lead to recommendations for future opportunities



Measures	Benchmark	2023 target
Number of PhD, post-doctoral and early career researchers supported	30	50
Number of scientific exchanges	10	20
Report released	No benchmark	1
Number of participants in innovation initiatives	100	600
Number and details of new ideas generated that provide benefit for the cotton industry	1	5
Percentage of growers that report improved general resilience	No benchmark	60%
Number of futures workshops	1	2
Number and details of future opportunities to be followed up	18	40



Enabling strategy 1

Strengthening partnerships and adoption

Why we need to strengthen partnerships and adoption

CRDC, as an investment organisation, relies on high-quality partnerships with research providers to deliver findings and innovations that address new and existing challenges for the benefit of the industry in the long term.

For the Australian cotton industry to benefit from research investments, the outcomes need to be rapidly extended and adopted, and as applicable, commercialised.

CRDC is a partner in the industry's joint venture extension program, CottonInfo, in conjunction with Cotton Seed Distributors and Cotton Australia, delivering research findings and best practice information to growers.

To implement this Strategic Plan, it is paramount that we continue to collaborate and further strengthen relationships with our partners across the cotton industry.

Working together and developing partnerships will ensure the adoption pathway for research outcomes is effective and meets the needs of cotton growers.

Key focus areas and outcomes

To ensure the effective adoption of cotton R&D, CRDC will invest in strengthening **partnerships and collaboration, best practice through myBMP** and supporting **innovation and commercialisation**.

CRDC will work with our industry to ensure our research investments add value and remain relevant to growers.

We will enhance our CottonInfo partnership and build up its capacity to deliver information and R&D findings to growers when and where it is needed.

National and international collaborations will be fostered and cross-sectoral research strengthened to develop multi-disciplinary and multi-institutional resources, and create cotton industry centres of excellence.

Through *myBMP*, the industry's best practice program, CRDC will provide growers with best practice information that reflects the latest R&D outcomes, based on science and measured impact.

CRDC will increase commercialisation of R&D through improved processes and by ensuring intellectual property assets are managed holistically and proactively. We will also work with research partners to improve adoption pathways and assist researchers to innovate and become more commercially focused.

Activities

Partnerships and collaboration will be delivered by:

- Investing in research that meets the needs of growers and consultants and working with partners to tailor and disseminate research outcomes
- Working collaboratively with CottonInfo to demonstrate, build and communicate practical applications for R&D outcomes
- Working collaboratively for mutual benefit

Best practice (*myBMP*) will be delivered by:

- Working closely with partners to ensure R&D outcomes are included in *myBMP* practice modules

Innovation and commercialisation will be delivered by:

- Working with research partners from development to proof of concept and commercialisation (where a strong business case exists)



It is paramount that we continue to collaborate and further strengthen relationships with our partners across the cotton industry.



Enabling strategy 1

Strengthening partnerships and adoption

Measures of success

Key focus areas	Outcomes	Performance indicator
PARTNERSHIPS AND COLLABORATION	Growers/consultants value CRDC farming systems research outcomes	Maintain or increase the number of growers/consultants that value CRDC research outcomes
	CottonInfo partnership is maintained and practice change improved	R&D outcomes are demonstrated through extension and adoption activities
	Partnerships are strengthened to engage multi-disciplinary and multi-institutional resources (centres of excellence)	Evidence of effective collaborative projects
BEST PRACTICE (myBMP)	Best practice is based on science and measured impact	myBMP practice modules reflect latest R&D outcomes
INNOVATION AND COMMERCIALISATION	Improved R&D innovation and commercialisation	CRDC supports researchers to innovate and become more commercially focused
		Research partners are supported through the commercialisation process (to ensure successful knowledge transfer)
		Commercialisation and knowledge transfer is accelerated



Measures	Benchmark	2023 target
Percentage of growers/consultants that report valuing CRDC outcomes	Growers: 77% Consultants: 72%	85%
Number of demonstration sessions	150	200
Percentage of participants that report increased knowledge, skills and intention to change behaviour as a result	70%	85%
Percentage of investments that include cross sectoral partnerships	25%	40%
Number of new international and national partnerships	2	5
Partner satisfaction ranking	8.2 out of 10	8.5 out of 10
Percentage of topics within <i>myBMP</i> modules (that CRDC contributes to) that have been updated with CRDC R&D outcomes	95%	100%
Number of projects with commercialisation potential	3	5
Researchers report satisfaction with CRDC commercialisation support	No benchmark	85%
Percentage improvement in duration from conception to market entry (per product category)	No benchmark	20%



Enabling strategy 2

Driving RD&E impact

Why we need to drive RD&E impact

CRDC's RD&E investments are designed to enhance the environmental, social and economic benefits to cotton growers, the cotton industry, regional communities and the Australian public.

As an RDC, CRDC has an obligation to ensure that all the investments we make deliver impact for our stakeholders. To achieve this, it is essential CRDC understands the RD&E priorities of our stakeholders and has the foundations in place to effectively deliver those needs through our RD&E investments.

We must also measure, evaluate and communicate the impact and effectiveness of our RD&E in an open and transparent way to our stakeholders.

By driving and communicating the impacts of our RD&E investments, CRDC will create value for our stakeholders, grow the industry and maintain confidence in RD&E.

Key focus areas and outcomes

To take the Australian cotton industry further forward and secure a more innovative, profitable, sustainable and dynamic Australian cotton industry, CRDC will work with our stakeholders and partners to demonstrate that our RD&E investments deliver **impact and effectiveness**.

CRDC will ensure our RD&E investments meet grower, industry and government needs and that all of our projects align with stakeholder priorities.

To demonstrate the delivery of RD&E impact, we will use a monitoring and evaluation framework to report on our performance against desired impacts. In addition, CRDC will assess the capacity to which funded projects demonstrate value and provide a positive return on investment.

CRDC will also ensure that growers, the cotton industry and government are informed and aware of the impact of RD&E outcomes.

Activities

Impact and effectiveness will be delivered by:

- Engaging with stakeholders and partners annually to identify and prioritise the challenges and opportunities facing the Australian cotton industry
- Assessing and monitoring the effectiveness of RD&E investments and the extent to which stakeholder priorities are addressed
- Assessing the impact and return on investment from RD&E projects
- Effectively communicating the outcomes and impacts of RD&E investments to stakeholders



By driving and communicating the impacts of our RD&E investments, CRDC will create value for our stakeholders, grow the industry and maintain confidence in RD&E.



Enabling strategy 2

Driving RD&E impact

Measures of success

Key focus areas	Outcomes	Performance indicator
IMPACT AND EFFECTIVENESS	CRDC's RD&E investments meet grower, industry and government needs	Funded projects align with identified research priorities
	CRDC monitors and evaluates RD&E impact	Positive stakeholder feedback on the relevance and value of CRDC investments
	CRDC funded projects demonstrate value and return on investment	Monitoring and evaluation evidence demonstrates RD&E impact
	Growers, the cotton industry and government are informed and aware of RD&E outcomes	Positive return on investment
		Stakeholders report that CRDC communications meet their needs





Measures	Benchmark	2023 target
Percentage of aligned projects	100%	100%
Percentage of positive responses	Growers: 88% Consultants: 92%	95%
RD&E impact reports	5	5
Investments demonstrate a minimum ratio of benefit/cost	5:1 ROI	> 5:1 ROI
Communications satisfaction ranking	8.3 out of 10	8.5 out of 10


STRATEGIC ALIGNMENT WITH PRIORITIES

Our Strategic Plan aligns with Australian Government and industry priorities. It supports the Australian Government’s Science and Research Priorities, its Rural Research, Development and Extension Priorities, and also addresses the Cotton Sector RD&E Strategy Priorities.



CRDC’S STRATEGIC RD&E PLAN 2018–23

	Key focus areas	Australian Government		Cotton Sector RD&E Strategy Priorities
		Science and Research Priorities	Rural Research Development and Extension Priorities	
Goals				
 <p>Increase productivity and profitability on cotton farms</p>	Optimised farming systems	<ul style="list-style-type: none"> • Food (and fibre) • Soil and water • Transport • Energy • Resources 	<ul style="list-style-type: none"> • Advanced technology • Soil, water and managing natural resources • Adoption of R&D 	<ul style="list-style-type: none"> • Farming systems • Development and delivery
	Transformative technologies	<ul style="list-style-type: none"> • Food (and fibre) • Soil and water • Energy • Resources • Environmental change 	<ul style="list-style-type: none"> • Advanced technology • Biosecurity • Soil, water and managing natural resources • Adoption of R&D 	<ul style="list-style-type: none"> • Product and market development • Development and delivery
	Protection from biotic threats and environmental stresses	<ul style="list-style-type: none"> • Food (and fibre) • Soil and water • Environmental change • Health 	<ul style="list-style-type: none"> • Biosecurity • Soil, water and managing natural resources • Adoption of R&D 	<ul style="list-style-type: none"> • Farming systems
 <p>Improve cotton farming sustainability and value chain competitiveness</p>	Sustainability of cotton farming	<ul style="list-style-type: none"> • Soil and water • Energy • Resources • Environmental change 	<ul style="list-style-type: none"> • Soil, water and managing natural resources 	<ul style="list-style-type: none"> • Farming systems • People, businesses and communities
	Create higher-value uses for cotton	<ul style="list-style-type: none"> • Food (and fibre) • Transport • Advanced manufacturing • Environmental change 	<ul style="list-style-type: none"> • Advanced technology • Soil, water and managing natural resources • Adoption of R&D 	<ul style="list-style-type: none"> • Farming systems • Product and market development
	Measurement and reporting throughout the value chain	<ul style="list-style-type: none"> • Food (and fibre) • Transport • Energy • Resources • Advanced manufacturing • Environmental change 	<ul style="list-style-type: none"> • Advanced technology • Biosecurity • Soil, water and managing natural resources • Adoption of R&D 	<ul style="list-style-type: none"> • Product and market development • Development and delivery



 <p>Build adaptive capacity of the cotton industry</p>	Science and innovation capability, and new knowledge	<ul style="list-style-type: none"> • Food (and fibre) • Soil and water • Environmental change • Health 	<ul style="list-style-type: none"> • Advanced technology • Biosecurity • Adoption of R&D 	<ul style="list-style-type: none"> • People, businesses and communities
	Futures thinking	<ul style="list-style-type: none"> • Food (and fibre) • Environmental change 	<ul style="list-style-type: none"> • Advanced technology • Soil, water and managing natural resources • Adoption of R&D 	<ul style="list-style-type: none"> • Farming systems • People, businesses and communities

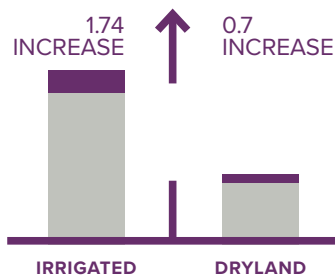
Enabling strategies

 <p>Strengthening partnerships and adoption</p>	Partnerships and collaboration	<ul style="list-style-type: none"> • Food (and fibre) • Soil and water • Energy • Resources • Environmental change 	<ul style="list-style-type: none"> • Adoption of R&D 	<ul style="list-style-type: none"> • People, businesses and communities
	Best practice (<i>myBMP</i>)	<ul style="list-style-type: none"> • Food (and fibre) • Soil and water • Energy • Resources • Environmental change 	<ul style="list-style-type: none"> • Biosecurity • Soil, water and managing natural resources • Adoption of R&D 	<ul style="list-style-type: none"> • Farming systems • People, businesses and communities • Development and delivery
	Innovation and commercialisation	<ul style="list-style-type: none"> • Food (and fibre) • Advanced manufacturing 	<ul style="list-style-type: none"> • Advanced technology • Adoption of R&D 	<ul style="list-style-type: none"> • Product and market development • Development and delivery
 <p>Driving RD&E impact</p>	Impact and effectiveness	<ul style="list-style-type: none"> • Environmental change 	<ul style="list-style-type: none"> • Adoption of R&D 	<ul style="list-style-type: none"> • Development and delivery

Key targets for Strategic Plan by 2023

Through the implementation of this Strategic Plan, CRDC aims to secure a more innovative, profitable, sustainable and dynamic Australian cotton industry. The key targets we will strive to achieve by 2023 (as outlined within the three goals, and two enabling strategies of this Plan) are shown graphically.

Overall, this plan will contribute to creating \$2 billion in additional gross value of cotton production



The 5-year average cotton yield will increase to 11.6 bales/ha (irrigated; 1.74 bales/ha more than 2016-17) and 4.7 bales/ha (dryland: 0.7 bales/ha more than 2016-17)



50+ researchers supported through strategic career pathways



CRDC participating in 6 global sustainability initiatives



5+ NEW BENEFICIAL TECHNOLOGIES AVAILABLE TO COTTON GROWERS



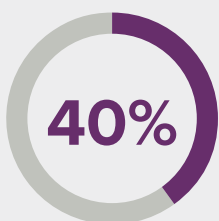
OF COTTON FARMS DIGITALLY ENABLED



2+ INDUSTRY-LED SCENARIOS DELIVERED FOR BIOSECURITY PREPAREDNESS



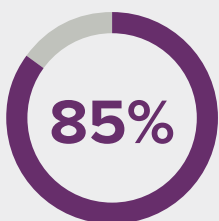
2+ NEW COTTON PRODUCTS COMMERCIALISED



of CRDC investments include cross sectoral partnerships



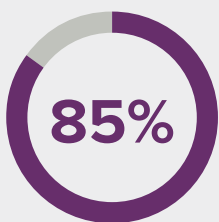
of growers report improved resilience



of growers/consultants value CRDC research outputs



of topics within *myBMP* modules (that CRDC contributes to) include CRDC's latest R&D outcomes



of researchers satisfied with CRDC commercialisation support



of CRDC projects align with grower, industry and government priorities

Successfully delivering our Strategic Plan

Corporate governance and operations

CRDC’s corporate governance framework and operations support the delivery of this Strategic Plan.

Function	Description
Accountability	CRDC began operations in 1990 under the PIRD Act and since 2013 is also subject to the PGPA Act. CRDC is accountable to the Australian Government through the Minister for Agriculture and Water Resources and to industry through its industry representative body Cotton Australia.
Audits	Internal and external audits of CRDC operations, financials and research investments are conducted regularly. The role of the Board’s Audit Committee is to ensure CRDC’s financial reporting is a true and fair reflection of its financial transactions. The committee is responsible for identifying areas of significant business risk and stipulating the means of managing any such risk.
Balanced portfolio and resource allocation	CRDC estimates around \$125 million will be invested over five years (2018–23) and actively seeks to achieve a balanced RD&E portfolio that considers the distribution of investment across: <ul style="list-style-type: none"> • The RD&E strategies • The type of research, including basic, applied, blue-sky, development and delivery • In-project risks • Researcher experience and capacity • Research providers • Timeframe to outcomes • The likely return on investment for projects and programs • RD&E management.
Board	The CRDC Board has eight skilled-based members, consisting of a Chair (appointed by the Minister for Agriculture and Water Resources), the Executive Director (selected by the Board) and six non-executive Directors nominated by an independent selection committee. Appointment of non-executive Directors is subject to Ministerial approval, and Directors (other than the Executive Director) are appointed for three-year terms. The Board sets the corporation’s strategic direction and delegates responsibility of day-to-day management to the Executive Director. The Board Charter outlines Directors’ functions, powers and duties, and sets the roles and responsibilities of Directors and staff. The Board operates an Audit Committee, Intellectual Property Committee and Remuneration Committee.
Charter	CRDC’s Charter under the PIRD Act is to invest in and manage a portfolio of RD&E projects and programs in order to secure economic, environmental and social benefits for the Australian cotton industry and the community. This is conducted in a framework of improved accountability for research and development spending in relation to the cotton industry.

<p>Collaboration</p>	<p>CRDC works in partnership with stakeholders to identify research priorities, achieve strategic outcomes, and to leverage higher returns for our investments.</p> <p>Collaboration underpins CRDC’s investment strategy, with CRDC partnering in over 80 per cent of RD&E projects conducted in the cotton sector. At the commencement of this Plan, 40 per cent of CRDC investments are in cross-sectoral RD&E.</p> <p>The collaboration extends from national to cotton industry-specific and local initiatives – from national cross-sectorial partnerships, such as those on water and soils, and those with fellow RDCs in the delivery of major government grants; to the industry-specific extension joint venture, CottonInfo; and at the local level, partnerships with Cotton Grower Associations on CRDC Grassroots Grants.</p>
<p>Commercialisation, communications and adoption</p>	<p>CRDC plays a pivotal role in facilitating fast and effective dissemination of cotton R&D outcomes. CRDC undertakes detailed analysis and planning for determining the most appropriate adoption pathway for the results of research projects. While the majority of research results are extended as information, CRDC actively works with its research partners to develop commercial adoption pathways where that is preferred.</p> <p>CRDC has detailed policies and procedures for determining its involvement in the commercialisation of the results of R&D projects where that is the preferred adoption pathway.</p>
<p>Funding</p>	<p>CRDC’s investment in RD&E is funded through an Australian cotton industry levy with matching Commonwealth contributions. The partnership between Australian cotton growers and the Australian Government to co-invest in RD&E through CRDC is formalised by a funding agreement. This agreement between the Government and CRDC sets out expectations about CRDC’s performance, transparency and accountability to levy-payers, the Government and the public. The CRDC Funding Agreement is published on the CRDC website.</p>
<p>Investment decisions</p>	<p>CRDC works with industry and the Australian Government to identify and evaluate the cotton industry’s requirements for RD&E. Cotton Australia and cotton growers via the research advisory panels provide advice to the CRDC on research projects and where research dollars should be invested.</p>
<p>M&E Framework</p>	<p>The CRDC Strategic Plan is underpinned by a Monitoring and Evaluation Framework. The Framework was developed simultaneously with the Strategic Plan. It guides the collection and analysis of information to allow CRDC to measure, evaluate and report on progress towards desired outcomes.</p> <p>The focus of the framework is to measure the success of the Strategic Plan in delivering impact and value to growers, industry and government stakeholders.</p>
<p>Organisational Strategy</p>	<p>This CRDC Strategic Plan is also underpinned by a CRDC Organisational Strategy which guides CRDC’s effectiveness, efficiency and assesses organisational performance.</p>
<p>Policies, procedures and charters</p>	<p>CRDC has a suite of policies, procedures and charters consolidated into handbooks to assist with the effective governance of the organisation including: Charter of Corporate Governance Handbook, Finance and Administration Policy Handbook, Human Resource Management Policy Handbook, and Workplace Health and Safety Policy Handbook.</p>
<p>Reporting</p>	<p>In accordance with the PIRD Act and the PGPA Act, CRDC annually reports on financial investments, operations, project outcomes and Strategic Plan progress in its Annual Operational Plan and Annual Report.</p> <p>In order to ensure stringent evaluation of its RD&E activities, CRDC is committed to the ongoing Council of Rural RDC’s Impact Evaluation process.</p>



FINANCIALS

CRDC's investment portfolio is primarily funded through a grower levy and matching Commonwealth contributions. This is supported by co-investment from the Commonwealth and state governments, and strategically leverages collaborative investments, as well as minor income from other sources such as interest and royalties.

CRDC Resource Allocation

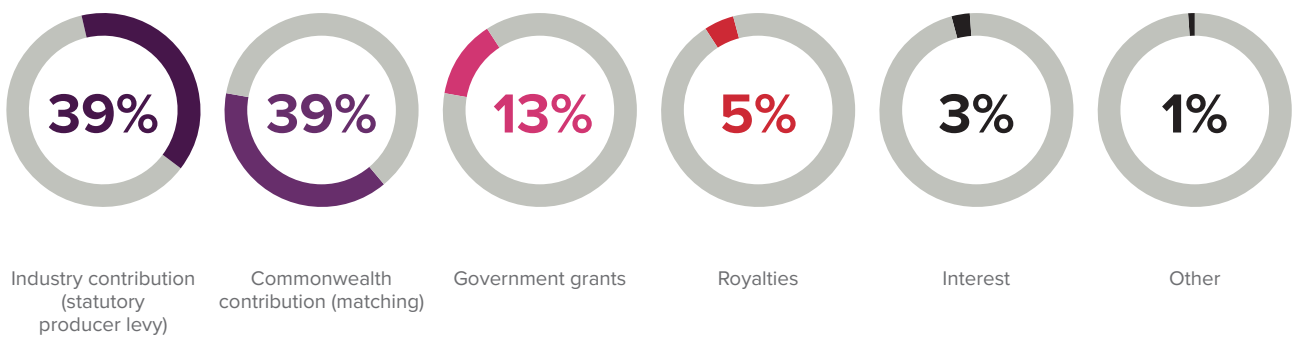
In implementing this Plan, CRDC intends to commit a total expenditure of \$125m over five years. This represents a 15 per cent increase on the 2013-18 Strategic Plan total expenditure target.

Based on key assumptions of:

- **Revenue** – annual average cotton production increasing from 3.5 to 3.9 million bales over the five years and ongoing successful grant applications for revenue.
- **Equity** – financial reserves accumulated during above average production years to be deployed to sustain RD&E investment and capacity over the five years.
- Annual RD&E Investments to average \$21 million, 84 per cent of total expenditure, and RD&E management costs \$4 million or 16 per cent of total expenditure.

CRDC Financial Resource Allocation	Average Annual	5-year Total
Operating income	\$'000	\$'000
Industry contribution (statutory producer levy)	8,750	43,750
Commonwealth contribution (matching)	8,750	43,750
Government grants	2,900	14,500
Royalties	1,220	6,100
Interest	625	3,125
Other	250	1,250
Operating income total	22,495	112,475
Operating expenditure		
RD&E Investments		
Goal 1 (Increase productivity and profitability on cotton farms)	14,431	72,155
Goal 2 (Improve cotton farming sustainability and value chain competitiveness)	2,723	13,615
Goal 3 (Build adaptive capacity of the cotton industry)	2,126	10,630
Enabling Strategy 1 (Strengthening partnerships and adoption)	1,320	6,600
Enabling Strategy 2 (Driving RD&E impact)	400	2,000
Total	21,000	105,000
RD&E Management Costs		
<i>Employees</i>	2,500	12,500
<i>Corporate</i>	1,500	7,500
Total	4,000	20,000
Operating expenditure total	25,000	125,000
Operating result – surplus (deficit)	(2,505)	(12,525)
Equity & Reserves		
Equity & Reserves at end of 5-years		21,967

Income Sources five year total



RD&E Investments five year total





CRDC'S STRATEGIC RD&E PLAN 2018–23

Who we are	Cotton Research and Development Corporation (CRDC) is an Australian Government statutory authority established in 1990 under the PIRD Act.
Our purpose	Investing in world-leading RD&E to benefit Australia's dynamic cotton industry.
Our vision	CRDC: Powering the success of Australian cotton through world-leading RD&E.
Our outcome statement	Increased economic, social and environmental benefits for the Australian cotton industry, and the wider community, by investing in knowledge, innovation and its adoption.

Goals	Key focus areas	Outcomes	Activities	
 <p>Increase productivity and profitability on cotton farms</p>	Optimised farming systems	• Improved yield and quality	• Investigating and communicating the application of beneficial new on-farm technologies and scientific approaches	
		• Improved input efficiencies	• Investing in real time monitoring, building adoption capacity and developing benchmarks, decision tools and practices to support on-farm resource efficiency decisions	
		• On-farm sustainable development is supported	• Testing and providing information on the social, environmental and economic viability of new farming systems	
		• Improved reliability of cotton production	• Investigating the drivers behind farming system volatility and potential mitigations	
	Transformative technologies	• New technologies are adapted for use in cotton	• Investigating and facilitating the development (by third parties) and adaption of beneficial new technologies and systems for cotton farms	
		• Cotton farms are digitally enabled	• Working with partners to develop strategies to support digital applications and develop frameworks for digital agricultural tools in Australia	
	Protection from biotic threats and environmental stresses	• Increased understanding of the impact of pests, diseases and weeds, and environmental stresses	• Investigating and monitoring the economic, environmental and social impacts of biotic threats and environmental stresses	
		• Improved identification, surveillance and management systems for pests, diseases and weeds, and environmental stresses	• Investigating and delivering new and improved tools, systems and strategies for the surveillance, prevention and sustainable and responsible management of biotic threats and environmental stresses	
		• Industry is prepared for a biosecurity incursion	• Working collaboratively with growers and consultants to deliver industry-led biosecurity preparedness activities and address identified knowledge gaps	
	 <p>Improve cotton farming sustainability and value chain competitiveness</p>	Sustainability of cotton farming	• Improved environmental footprint for cotton farms	• Undertaking research on how to improve the most significant components of cotton's environmental footprint, including water and nitrogen management, native vegetation and soil carbon • Understanding and informing the methodologies and metrics used to assess the footprint of raw materials and their value chains
		Create higher-value uses for cotton	• Increased value for Australian cotton	• Identifying opportunities for improving cotton product performance, and high-value uses for cotton
			• Increased understanding of market requirements and opportunities throughout the value chain	• Investigating market requirements and opportunities throughout the value chain, and communicating those to industry
Measurement and reporting throughout the value chain		• CRDC collaborates in global leadership for sustainability initiatives	• Facilitating and participating in global sustainability forums	
		• The value chain is transparent and understood by participants to improve market opportunities	• Providing information to the value chain	



Build adaptive capacity of the cotton industry

	Science and innovation capability, and new knowledge	<ul style="list-style-type: none"> • Science and innovation capacity is strengthened and strategically fit for a digital future 	<ul style="list-style-type: none"> • Facilitating and participating in global initiatives, supporting researchers to use new technologies and uses for data, and creating and facilitating opportunities for national and international RD&E exchange
		<ul style="list-style-type: none"> • Increased understanding of and participation from the diverse human capital in regional communities 	<ul style="list-style-type: none"> • Investigating regional community demographics and available service providers and supporting opportunities for greater diversity in the cotton industry
		<ul style="list-style-type: none"> • Increased opportunities for innovation skills development 	<ul style="list-style-type: none"> • Working collaboratively with cross-sectorial partners to support regional innovation
	Futures thinking	<ul style="list-style-type: none"> • Australian cotton growers are able to adapt to change 	<ul style="list-style-type: none"> • Assessing and monitoring grower resilience and on-farm natural capital, and supporting and communicating initiatives to address knowledge gaps
		<ul style="list-style-type: none"> • Increased opportunities for strategic foresighting 	<ul style="list-style-type: none"> • Investigating existing and future markets for Australian cotton and communicating this to the industry

Enabling strategies	Key focus areas	Outcomes	Activities
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Strengthening partnerships and adoption

	Partnerships and collaboration	<ul style="list-style-type: none"> • Growers/consultants value CRDC farming systems research outcomes 	<ul style="list-style-type: none"> • Investing in research that meets the needs of growers and consultants and working with partners to tailor and disseminate research outcomes
		<ul style="list-style-type: none"> • CottonInfo partnership is maintained and practice change improved 	<ul style="list-style-type: none"> • Working collaboratively with CottonInfo to demonstrate, build and communicate practical applications for R&D outcomes
		<ul style="list-style-type: none"> • Partnerships are strengthened to engage multi-disciplinary and multi-institutional resources (centres of excellence) 	<ul style="list-style-type: none"> • Working collaboratively for mutual benefit
	Best practice (myBMP)	<ul style="list-style-type: none"> • Best practice is based on science and measured impact 	<ul style="list-style-type: none"> • Working closely with partners to ensure R&D outcomes are included in myBMP practice modules
	Innovation and commercialisation	<ul style="list-style-type: none"> • Improved R&D innovation and commercialisation 	<ul style="list-style-type: none"> • Working with research partners from development to proof of concept and commercialisation (where a strong business case exists)



Driving RD&E impact

	Impact and effectiveness	<ul style="list-style-type: none"> • CRDC's RD&E investments meet grower, industry and government needs 	<ul style="list-style-type: none"> • Engaging with stakeholders and partners annually to identify and prioritise the challenges and opportunities facing the Australian cotton industry
		<ul style="list-style-type: none"> • CRDC monitors and evaluates RD&E impact 	<ul style="list-style-type: none"> • Assessing and monitoring the effectiveness of RD&E investments and the extent to which stakeholder priorities are addressed
		<ul style="list-style-type: none"> • CRDC funded projects demonstrate value and return on investment 	<ul style="list-style-type: none"> • Assessing the impact and return on investment from RD&E projects
		<ul style="list-style-type: none"> • Growers, the cotton industry and government are informed and aware of RD&E outcomes 	<ul style="list-style-type: none"> • Effectively communicating the outcomes and impacts of RD&E investments to stakeholders



Australian Government
Cotton Research and
Development Corporation



CRDC

www.crdc.com.au