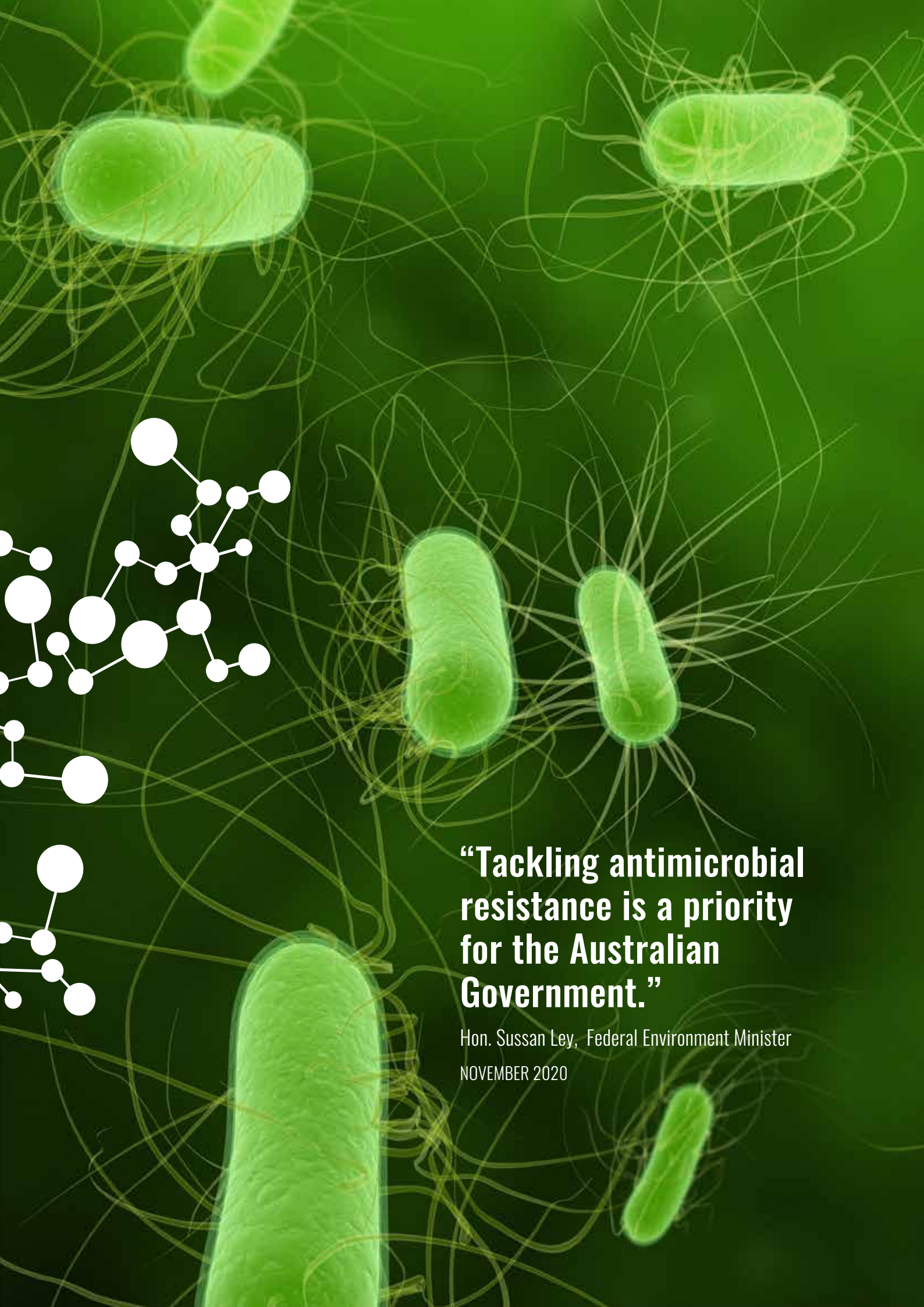
# INFORMATION BROCHURE

Cooperative Research Centre for Solving Antimicrobial resistance in Agribusiness, Food and Environments

CRC SAAFE



**“Tackling antimicrobial resistance is a priority for the Australian Government.”**

Hon. Sussan Ley, Federal Environment Minister

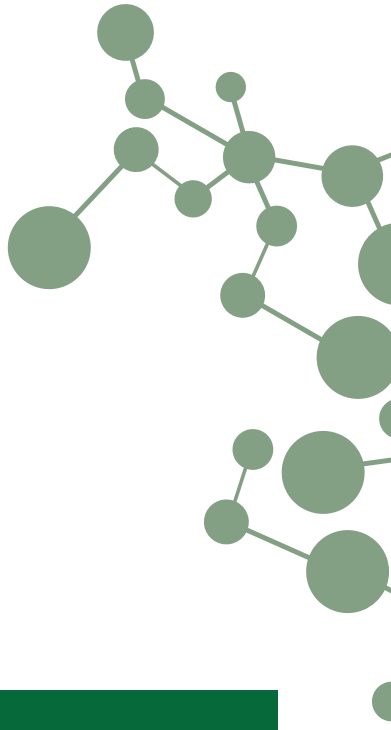
NOVEMBER 2020

## Antimicrobial resistance (AMR) threatens lives and livelihoods. Its global spread poses an immense challenge to our health, food security and economic prosperity.

Antimicrobials such as antibiotics, antifungals and antiviral medicines are essential for preventing and treating infections and diseases in humans, animals and plants.

But antimicrobials are being overused and many have stopped working. This leaves us with no way to treat infectious bacteria, viruses, fungi and parasites which have become 'antimicrobial resistant'.

Antimicrobial resistant organisms are present in many environments and can infect both humans and animals. Food and water both contribute to the spread of AMR.



AMR is becoming more prevalent and more extreme. It poses an undeniable threat to the security and growth of Australia's food and agribusiness sectors, and puts our water security and circular economy at risk.

## What Australian industries need now is a concentrated, coordinated approach to manage AMR.

AMR is a complex, cross-sectoral issue. To manage it, we need to grow our national expertise and develop and share solutions.

By working together across multiple industries and community sectors we can address the threat of AMR for Australia's food security, agricultural trade and economy.

"Containing antimicrobial resistance is one of the **highest-yield development investments** available to countries today."

WORLD BANK

## CRC SAAFE will lead the AMR response for the Australian agribusiness, food, organic waste and environmental management sectors.

CRC SAAFE will coordinate a multi-sector 'One Health' response to AMR, identifying and addressing key challenges and innovation opportunities.

Through focused innovation, CRC SAAFE will assist partners to develop, commercialise and apply game-changing solutions, decision support and interventions.

By providing the tools and knowledge to proactively monitor, manage and mitigate the spread of AMR, CRC SAAFE will protect human and animal health, food and water security and economic prosperity.

Our aims are strongly aligned with Australia's industry, education, and research priorities, including the National Antimicrobial Resistance Strategy, the Animal Sector National Antimicrobial Resistance Plan, the Food and Agribusiness Sector Competitiveness Plan, and the Commonwealth Biosecurity 2030 roadmap.

## Our Vision

To ensure the long-term success of Australia's food and agribusiness industries and protect the environments in which they operate.

## Our Mission

To deliver immediate and medium-term benefits for industry through the implementation of informed and effective solutions to mitigate and manage antimicrobial resistance risks.

# GROWING AND PROTECTING AUSTRALIAN INDUSTRIES

## Biosecurity

CRC SAAFE will work across a wide range of industries, creating new tools to strengthen internal surveillance and border controls in order to preserve the safety and security of Australia's agricultural imports and exports.

## Export trade

International food standards are already changing in response to AMR. CRC SAAFE will provide cost-effective ways for Australian industry to meet these standards and access new markets.

## Circular economy

CRC SAAFE will shore up circular economies with new technologies that diversify waste sector products and reduce AMR risks for agribusinesses that are interconnected through water, waste, and by-products.

## Aquaculture

High value aquaculture requires clean water and good quality feed for stock. CRC SAAFE will develop best practice to mitigate environmental AMR and accelerate the development of new vaccines and better feeds to decrease the need for antimicrobials.

## Horticulture

AMR is reducing the effectiveness of antifungals used in horticulture. CRC SAAFE will help the sector find alternative treatments and solutions to increase marketable yields and deliver enhanced food quality for consumers

## Meat and Livestock

CRC SAAFE's sustainable animal industries program will focus on implementing husbandry, nutrition, and vaccination interventions to mitigate AMR risk and protect Australia's reputation for high animal welfare and food quality.

## Food

Consumers are increasingly aware of what they eat. CRC SAAFE will provide market insights and create cost-effective diagnostic tools to ensure the quality and safety of food products across value chains.

## Water

Wastewater treatment plants are AMR hotspots. CRC SAAFE will ensure we have effective barriers to prevent the spread of AMR, and produce high quality, affordable water for irrigation, production, and consumption.

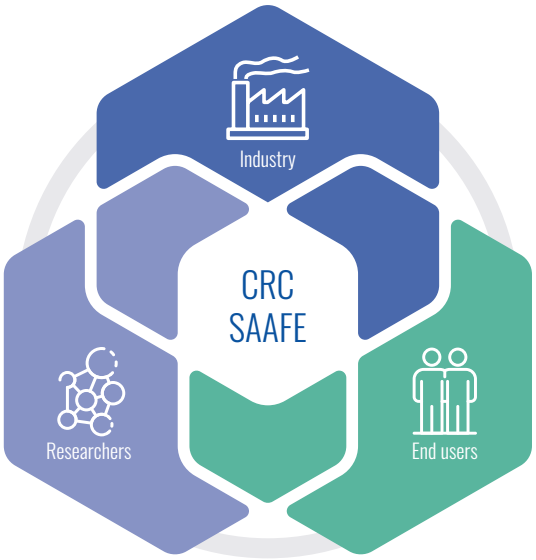
## Environments

Sustainable practice is best practice. By providing the evidence base to implement industry best practice CRC SAAFE will protect water catchments and wildlife health and reduce disease risks.

# RESEARCH PROGRAMS

To ensure our research is timely, relevant and useful, CRC SAAFE projects are developed in consultation with industry and a range of end users.

By connecting industries with similar AMR challenges, CRC SAAFE can help find shared solutions through co-funded projects with common scope and complementary outcomes.




Our research programs are organised around three pillars:

1. **AMR monitoring**
2. **AMR solutions**
3. **Digital integration and decision support.**

To ensure our research has real world impact, CRC SAAFE will work with industry bodies to implement tailored outreach, awareness and extension programs. This includes a range of short courses and industry linked PhDs, placements and internships.

## Research Principles

- Projects will be led by CRC members, with industry and end users at the forefront.
- All projects will deliver impacts for industry and end users.
- The CRC will seek to leverage cross-sector and partner collaboration, wherever possible.
- The CRC will partner and collaborate with relevant initiatives outside the CRC to maximise member benefit and avoid duplication.

# RESEARCH PROGRAM 1: AMR MONITORING

Program 1 focuses on monitoring and diagnostic technologies that empower better decision-making across food and agribusiness industries.

The program will create tools to detect pathogens, pollutants and other AMR risk factors and identify the catalysts and hurdles for behaviour change.

Potential innovations and developments include:

- Cost-effective, near real-time AMR monitoring within food production and processing.
- AMR monitoring for water, wastewater and environments.
- Actionable insights for AMR contaminants in circular economies.
- Determining if new treatment solutions are needed/cost-effective.
- Best practice guidelines for contaminant management.

## The Benefits

Empower data-based regulation, including self-regulation where possible.

Reduce food and animal loss through earlier disease detection.

Higher yields through improved disease prevention

Provide confidence to use a variety of water sources that meet quality standards.

Improve traceability of food past the farm-gate to reduce product rejection.

Cut treatment costs by ensuring interventions are necessary and effective.

# RESEARCH PROGRAM 2: AMR SOLUTIONS

Program 2 focuses on creating and improving interventions that mitigate AMR in food, water and waste systems.

Potential innovations and developments include:

- Best practice guidelines for reducing antimicrobial use.
- Developing new targeted treatments and alternatives.
- Improving water quality and waste treatments to reduce infection and disease, and decrease AMR loads to receiving environments.
- End-user, front-end digital technology for improved management of AMR risks.

## The Benefits

Increase agribusiness production by enabling access to safe and economic water supplies.

Provide economic evaluations of optimised water and waste treatment solutions, thereby reducing input costs for business.

Reduce disposal levies for food production and processing sectors.

Improve human health and animal welfare outcomes.

Extend the ongoing effectiveness of critically important antimicrobials treatments.

# RESEARCH PROGRAM 3: DIGITAL INTEGRATION AND DECISION SUPPORT

Program 3 integrates digital data and market data to allow better decision-making and cross-sectoral opportunities in food production, processing, regulation and value chains.

Potential innovations and developments include:

- Integrated data assets for industry-specific AMR intelligence.
- Data integration across food value chains to mitigate AMR risks to business and consumers.
- AI algorithms to optimise AMR-reducing decisions (e.g. better prescribing in animal husbandry).
- Industry-specific best practice guidelines for self-regulation.
- Data sets to monitor market, consumer and regulatory trends.

## The Benefits

Drive investment in AMR monitoring and intervention across agriculture, water and waste sectors.

Enhance food sustainability by maximising waste recycling.

Facilitate integrated monitoring systems to limit the economic impact of AMR.

Protect our environment and help meet the UN Sustainable Development Goals.

Protect Australia's reputation as a premium, safe food producer.

Secure international market access and growth of food exports.

Raise awareness of AMR and ensure public confidence in mitigation measures.

Provide digital technology for on-farm productivity, cost saving and tracing.

## WHAT IS A CRC?

A CRC is an industry-led collaboration between industry, researchers, government and the community.

The Australian Government's Cooperative Research Centres (CRC) Program provides co-funding to help industry partner with the research sector to solve critical challenges and develop new technologies, products and services.

The scheme provides grants of approximately $30 - 50 million to each successful consortium, typically providing one-to-one leverage of partner cash contributions.

CRCs are established as an independent company with independent board, elected by CRC member companies.

CRCs include an industry-focused education and training program, including a PhD program that builds capability and capacity.

# PARTNERSHIPS

CRC SAAFE will engage a broad range of industry and community partners from the food and agribusiness, water and waste management sectors. CRC SAAFE has three partner categories, as described below.

| Tier | Investment | Partner opportunity |
|---|---|---|
| 1 | **>$250k p.a. plus in-kind contributions** | • Be a member of the CRC company.<br>• Nominate up to two independent board member candidates and vote for the election of board directors.<br>• Nominate a representative for the Research and Commercialisation Committee.<br>• Create Foundation Projects that will commence on the CRC's establishment (industry partners).<br>• Nominate Foundation Fellows as (partially) funded researchers dedicated to working on CRC SAAFE projects (research partners). |
| 2 | **>$100k p.a. plus in-kind contributions** | • Be a member of the CRC company.<br>• Nominate one independent board member candidate and vote for the election of board directors.<br>• Nominate a representative for the Research and Commercialisation Committee.<br>• Nominate and lead research projects (industry partners). |
| 3 | **<$100k p.a. or in-kind contributions only** | • Nominate a representative for the Research and Commercialisation Committee.<br>• Participate in research projects (industry partners).<br>• Lead research projects when cash contributions are made to the extent that allows those projects to operate. |

# MORE INFORMATION

To find out how to become a participant in CRC SAAFE or for more information, please contact:

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Find out more

**unisa.edu.au/research/crc-saafe**