PROJECT PHOENIX

APPLIED RESEARCH

COMMUNITIES OF PRACTICE, PEOPLE AND SCIENCE

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Australian Government

Across all of our Project Phoenix activities and actions we pay respect to the Traditional Owners and Custodians of the lands and waters on which we work. We honour the resilience and continuing connection to country, culture and community of all Aboriginal and Torres Strait Islander people across Australia. We recognise the decisions we make today will impact the lives of generations to come.

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EXECUTIVE SUMMARY

Scope

The scope of this project is to conduct a desktop review of good practice approaches to coordinating and structuring applied, cross-sectoral research and development (R&D) and to develop and apply a framework to identify partnership opportunities for the native seed sector.

Introduction

The native seed sector currently operates in a siloed manner. It lacks coordinated access to resources (including funding), skills and knowledge to conduct effective R&D. This is hindering the extent to which the native seed sector is identifying and addressing research and knowledge gaps.

To improve restoration and conservation outcomes, there is an urgent need for coordinated research programs, monitoring and evaluation to ensure that research gaps are identified and addressed, knowledge is current and easily accessed.[1,2,3] This should be driven through a cross-sectoral framework for applied R&D.

This project identifies, reviews and assesses good practice approaches to coordinating and structuring applied, cross-sectoral R&D and develops and applies a framework to identify partnership opportunities for the native seed sector. Good practice R&D models refers to those that work well and produce results for the intended purpose, or that have become a standard way of conducting R&D. In this report, good practice applied R&D models have been described based on the approach to collaboration/coordination, the funding mechanism (co-finance/leverage; industry/non-profit/government) and the delivery approach (partner/procure).

The purpose of the review is to develop a draft framework for supporting the native seed sector through applied research.

Issues

The native seed sector does not have a coordinated approach, such as an R&D framework, to conducting cross-sectoral applied R&D. This is hindering the extent to which the native seed sector is identifying and addressing research and knowledge gaps.

[1] Hancock, N., Gibson-Roy, P., Driver, M., & Broadhurst, L. (2020). *The Australian Native Seed Survey Report*. Canberra: Australian Network for Plant Conservation.
[2] Commander, L. (2021). *Snap! A picture of the Australian Seed Sector in 2021.* Project Phoenix.
[3] Insights obtained by ACIL Allen through the Strategy design workshops for Project Phoenix.

Outcomes

Australia has a strong R&D sector, supported by a range of funding and collaboration models. The desktop review identified 23 models that are relevant to the native seed sector. Most of these are not discipline-specific. They attempt to build cross-sectoral collaboration through funding incentives/requirements and most use a competitive grant mechanism to deliver funding.

Four of these models were detailed in case studies and assessed for applicability to the Australian native seed sector.

Findings

- A Draft Framework (untitled) for applied R&D has been developed for the native seed sector using the lessons learnt from the desktop research of applied R&D funding models and findings from the Strategy[4] design workshops (Section 4).
- The Draft Framework is an innovative and good practice model for use in the native seed sector. It should aim to be outcome-driven, facilitate cross-sectoral collaboration and knowledge sharing, be overseen by a national cross-sectoral advisory body and leverage a broad range of opportunities to secure funding from existing models.

There are a range of applied, cross-sectoral R&D models in Australia that could potentially be applied to the native seed sector. The key findings from the workshops[5] on R&D are as follows:

- The native seed sector operates in a siloed manner.
- There is a need to reduce silos and competition and to better fund and coordinate across the sector.
- The native seed sector should be coordinated at federal and state government levels.
- R&D should aim to better match resource and skill availability, and leverage private businesses and Traditional Owner priorities and knowledge to conduct/support R&D.
- Grant funding and commercial income streams should incentivise collaboration and focus on longer-term projects that will deliver longer-term outcomes.

[4] This Report contributes to the evidence base for a ten year strategy to guide the native seed and landscape sector. The document, which is untitled until endorsement in September 2021, is referred to as the Strategy in all Project Phoenix publications.

[5] R&D was a focus of the series of workshops run as part of the native seeds sector strategy (Project Phoenix).

Two of the four case studies are highly applicable to the native seed sector:

Case Study 1 — Linkage Projects

- Linkage Projects is an established national model, which participants in the native seed sector could apply for. It does not focus on a specific discipline.
- Primary applicants (eligible universities) are required to engage with cross-sector participants.
- Matched funding requirements would secure additional funding for the sector (with exemptions for non-profits and small businesses).

Case Study 2 — Rural R&D Corporations

- RDCs are a successful and established national R&D system with existing collaborative relationships.
- RDCs operate in the agricultural, regional and environmental spaces (complementary to the native seed sector).
- AgriFutures Australia (one of the 15 RDCs) has an Emerging Industries Program which is designed to develop industries through R&D and capacity building.

Lessons learnt include:

- Implementation of the Draft Framework requires sufficient resourcing to support longer-term collaboration and outcomes-driven applied R&D.
- Continual monitoring of progress of the Draft Framework will allow for its adaptive management. This will ensure that the Draft Framework can best meet the sector's needs for applied R&D as it scales and matures.

Evidence

Refer to Appendix A for a full bibliography and Appendix B for an overview of workshop attendees.

Recommendations

The following recommendations have been made based on the lessons learnt from the case studies and the assessment for applicability to the Australian native seed sector.

The lessons learnt from the case studies are summarised in the Findings section above and are provided in detail at the conclusion of each case study.

The assessment of applicability to the Australian native seed sector indicates the suitability of each case study as low, medium or high.

- Two of the four case studies (Case Study — 1 ARC Linkage Projects and Case Study 2 — Research and Development Corporations) were assessed as being highly suitable for the native seed sector as they are existing R&D funding models that organisations could readily apply for.
- Case Study 3 — CSIRO Innovation Connections is also an existing model that businesses and researchers could readily apply for. However, it has been rated medium on its suitability for the native seed sector as businesses and researchers would need to demonstrate that they intend to contribute to a growth sector (i.e. Food and Agribusiness). As such, not all organisations in the native seed sector would be eligible.
- Case Study 4 — NSW Adaptation Research Hub was identified as a useful partnership model that focuses on applied R&D directed towards policy objectives. This model identified the intended outcomes to be achieved and then assembled partnerships and activities to drive progress towards the outcomes. It has been rated medium on its suitability for the native seed sector as the model requires considerable government investment and coordinated policy effort. This is unlikely due to the dispersed responsibility for native seeds across Commonwealth, state and territory, and local governments. However, it provides a useful framework for coordinating across sectors to design and achieve outcomes-based applied R&D.

Key recommendations from this review are as follows:

1. **A national advisory body should be established to develop and implement the Draft Framework for applied R&D. The advisory body should include participants from across the native seed sector.**

2. **The Draft Framework should be outcomes-driven. The advisory body should identify outcomes and applied R&D priorities, following consultation with the sector and a review of existing literature and research gaps and priorities. The intended outcomes should guide the work programs/activities to be conducted and the partnerships that need to be formed.**

3. **An online platform should be established and annual fora held, to share knowledge, track progress and facilitate collaboration.**

4. **Native seeds organisations should leverage opportunities to secure funding from existing applied R&D funding models.**

1 INTRODUCTION

1.1 Context

Greening Australia received $5 million under the Federal Government's $50 million Bushfire Wildlife and Habitat Recovery Package. This funding has been allocated to Project Phoenix, which aims to increase native seeds and plant supply in preparation for the restoration of bushfire affected areas and other valuable habitat. This aims to support a response to the recent challenges in two main ways: an immediate response to the bushfire impacts; and by developing a longer-term vision to address systemic issues in native seeds supply in Australia. Project Phoenix will deliver strategic outcomes under eight priorities.

Under Priority 2: Build the capacity of the native seeds and nursery industry through coordination of seed collection activities in bushfire affected areas and other vulnerable landscapes, this activity *examines frameworks for supporting the sector through applied research*.

Applied research plays an important role in industry growth by generating applicable solutions and providing an underlying networked platform capability. By developing this platform, the sector can leverage repeated deployment of effort to:

- develop a better understanding of the sector, native seeds and plants from a scientific perspective (e.g. genomics)
- generate productivity gains for the sector through new and improved technologies, improved practices and efficiencies in resource use.

1.2 Scope

The scope of this project is to:

- conduct a desktop review of good practice approaches to coordinating and structuring applied, cross-sectoral research and development (R&D)
- develop and apply a framework to identify partnership opportunities for the native seed sector.

1.3 Methodology

The methodology used in this study included a desktop review of current applied R&D models, consultation with native seed sector participants, the development of four case studies, development of a framework of partnership opportunities and assessment of partnership opportunities using the framework.

Details on each part of the method is outlined below.

1.3.1 Desktop review

Applied R&D models were identified through desktop review. The primary search engine used was Google, including Google Scholar. The main search terms included:

- research and development/applied research/R&D/cross-sectoral
- grant/model/funding/scheme/initiative.

The search was restricted to Australian models.

1.3.2 Cross-sectoral consultation

Input from native seed sector participants were obtained through the consultation undertaken as part of the Strategy. A record of the stakeholder organisations and jurisdiction is provided in Appendix B.

1.3.3 Case study development

Four case studies were developed around examples that are either good practice and/or have good learnings that are potentially transferable to the native seed sector context. Each case study identifies:

- focus and objectives
- approach to collaboration
- funding mechanism
- delivery approach
- opportunities for economic development
- opportunities for capacity building
- opportunities for engagement
- opportunities for innovation
- key lessons learnt from the use of the model.

1.3.4 Framework for assessment and assessment

Information from the case studies was assessed to develop a framework to show where the partnership opportunities lie for the native seed sector, based on distribution of goals and capabilities across the models.

The assessment applied the partnership opportunities framework and identified priorities against strategic time horizons (short-medium-long term).

1.4 The rest of this report

The rest of this report is structured as follows:

- Section 2 provides an overview of current applied R&D models and identifies and assesses these for potential partnership opportunities frameworks.
- Section 3 details four case studies.
- Section 4 provides a Draft Framework for the native seed sector.
- Section 5 identifies the key findings and recommendations.
- Appendix A provides the bibliography
- Appendix B overviews the participants engaged in discussion on R&D in workshops for the Draft Strategy.

2 APPLIED R&D MODELS

The native seed sector currently operates in a siloed manner. It lacks coordinated access to resources (including funding), skills and knowledge to conduct effective R&D. This is hindering the extent to which the native seed sector is identifying and addressing research and knowledge gaps.

To improve restoration and conservation outcomes, there is an urgent need for coordinated research programs, monitoring and evaluation to ensure:

- research gaps are identified and addressed
- knowledge is current
- knowledge is easily accessed.

This should be driven through a cross-sectoral framework for applied R&D.

2.1 Applied R&D models

Innovation is an important driver of growth (economic, job and productivity), sustainability, and resilience. Innovation systems, including R&D, support industries to become more efficient and effective and enable them to adapt to changing circumstances, respond to emerging risks and challenges, and leverage opportunities.

A more innovative native seed sector would be more productive, efficient, competitive, coordinated and profitable. It would be more responsive to emerging challenges and opportunities and be able to more effectively respond to events such as the 2019–20 Black Summer bushfires.

Each sub-section below defines the key terms:

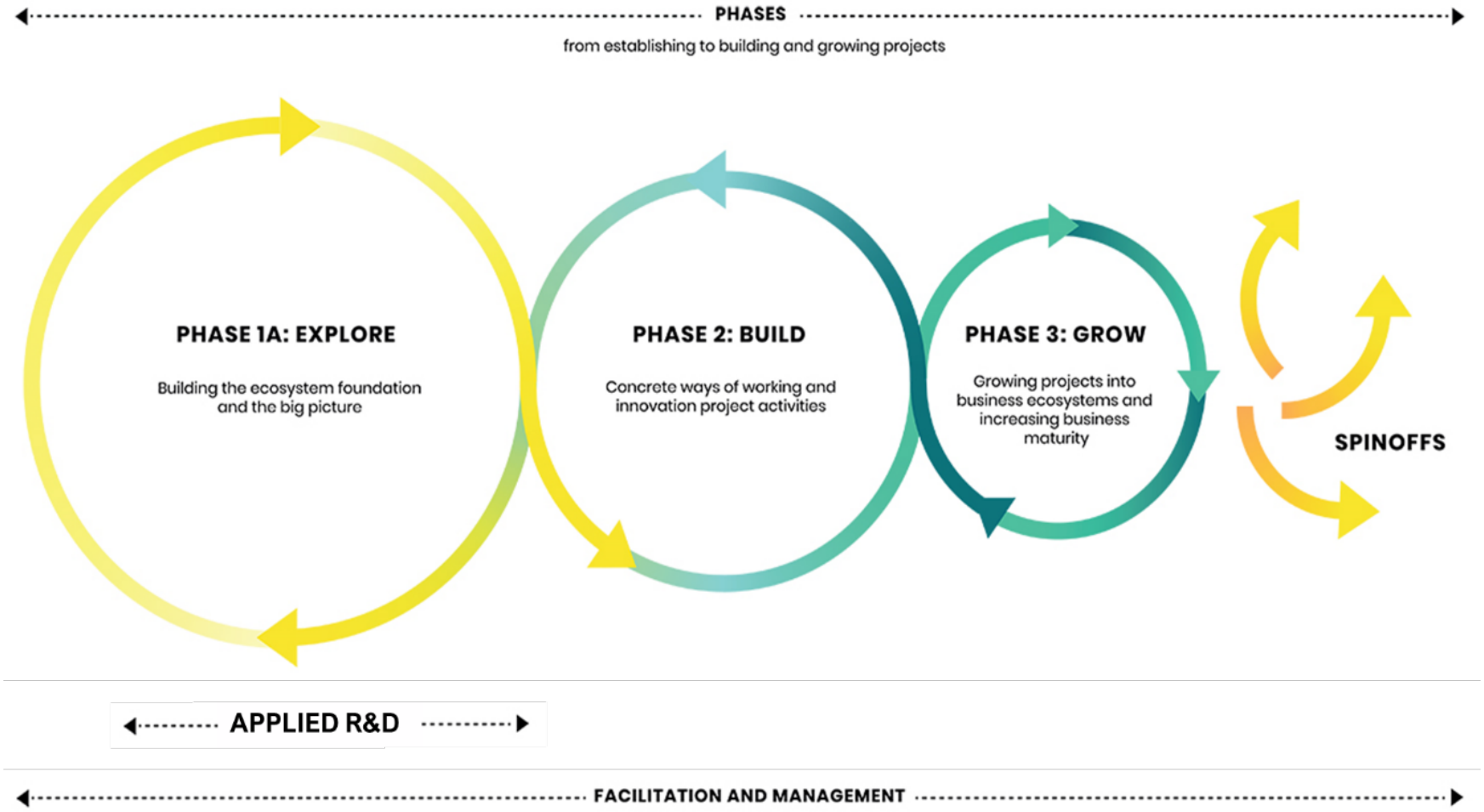
- applied R&D
- cross-sectoral collaboration.

2.1.1 Applied R&D

The innovation ecosystem is overviewed in Figure 2.1. A key part of the early innovation ecosystem is applied R&D. Applied R&D is undertaken to acquire new knowledge directed towards an aim or objective, or with a specific application in view. This differs from basic research, which is experimental and/or theoretical in nature, and undertaken to gain new knowledge, without a specific application in mind.[6,7]

[6] Parliament of Australia. (n.d.) *Life Cycle Support and Funding for Innovation and Commercialisation.* Pathways to Innovation.
[7] Innovation and Science Australia. (2016). *Performance Review of the Australian Innovation, Science and Research System 2016*.

FIGURE 2.1. OVERVIEW OF THE INNOVATION ECOSYSTEM



Source: ACIL Allen, adapted from https://www.openaccessgovernment.org/cross-sectoral-innovation-ecosystems-enable-the-european-green-deal/94269/

Applied R&D is particularly relevant for industry development as it can solve real problems across a range of industry participants.

2.1.2 Cross-sectoral collaboration

For applied R&D to be effective and efficient, and to foster industry development, it must be conducted across relevant sectors. In this report, cross-sectoral research refers to: **collaboration across a range of sectors/participants**.

For example, with reference to the native seed sector this would include those in conservation research, restoration industry and businesses, government, community and non-profit. This can be within a single discipline (e.g. genetics) or across multiple disciplines (e.g. conservation, germination, quality systems).

Collaboration between research and business is an important measure of the strength of knowledge exchange in a research system and is a feature of high-performing research systems.[8] To achieve strong collaboration, there is a need for:[9,10,11]

- role clarity among participants
- a common purpose and clear incentives
- complementarity of research activities (rather than duplication/overlap)
- mobility between research, industry and other participants
- a national strategic dialogue
- demonstration of the benefits of the research.

2.2 Applied R&D in Australia

The applied R&D system in Australia has a strong public focus, supported by a range of funding and collaboration models.

2.2.1 Funding sources

In Australia, the majority of R&D funding is sourced from businesses (~47 per cent), followed by governments (~27 per cent) then higher education (~17 per cent).

Businesses also account for the largest proportion of R&D expenditure (~56 per cent), followed by higher education (~30 per cent), then government (~9 per cent).[12,13]

[8] Universities Australia. (2014). *University Research: policy considerations to drive Australia's competitiveness.*
[9] Ibid.
[10] Department of Innovation, Industry, Science and Research. (2011). *Focusing Australia's Publicly Funded Research Review.*
[11] Frontier Economics. (2006). *National framework for Primary Industries Research, Development and Extension — Economic Considerations.*
[12] OECD (2016) Main Science and Technology Indicators, 2016–1. Accessed at https://stats.oecd.org/Index.aspx?DataSetCode=MSTI_PUB
[13] Universities Australia. (2014). *University Research: policy considerations to drive Australia's competitiveness*.

From the mid-1990s to 2015, expenditure has increasingly shifted from basic to applied research, reflecting Australia's commercialisation policy priorities. This has coincided with the emergence of a new generation of applied R&D models.

2.2.2 Relevant applied and cross-sectoral R&D models in Australia

The desktop review identified relevant documents and sources for analysis with a focus on applied and cross-sectoral R&D models in Australia. The identified models relevant to the native seed sector are detailed below and presented in Table 2.1 in terms of the following defining characteristics:

- discipline
- sector/participants
- approach to collaboration/coordination
- funding mechanism (co-finance/leverage; industry/non-profit/government)
- delivery approach (partner/procure)
- additional information.

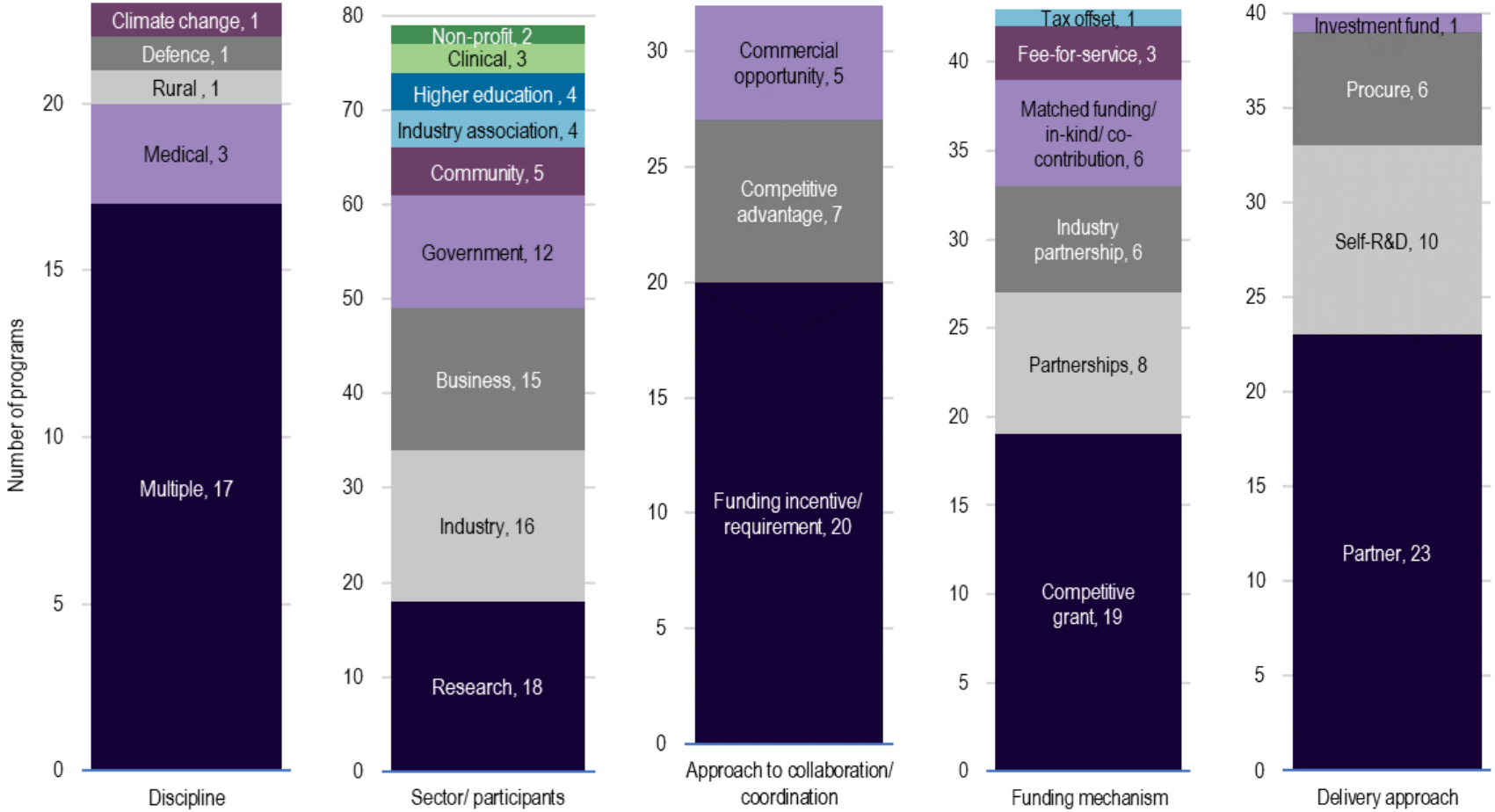
These are components that make up a strong R&D model.

Most of these applied R&D models are not discipline-specific and could be readily used by the native seed sector. Others that relate to medical, rural, defence and climate change research also provide useful lessons.

As overviewed in Figure 2.2, most models:

- do not have a specific discipline focus (17 of 23 models)
- attempt to build collaboration across participants in research, industry, business and government
- incentivise or require collaboration/coordination as part of the funding principles (20 of 23 models)
- deliver competitive grants as the funding mechanism (19 of 23 models)
- require partnering to deliver applied R&D (23 of 23 models).

FIGURE 2.2. OVERVIEW OF IDENTIFIED APPLIED AND CROSS-SECTORAL R&D MODELS



Note: a total of 23 models were identified. Some models delivered to multiple sectors/participants, and through a range of approaches to collaboration, funding and delivery. As such, the number of models identified in the graphs may sum to more than 23.

Source: ACIL Allen, various

TABLE 2.1. IDENTIFIED APPLIED R&D MODELS RELATED TO NATIVE SEEDS

#	MODEL	DISCIPLINE	SECTOR/ PARTICIPANTS	APPROACH TO COLLABORATION/ COORDINATION	FUNDING MECHANISM	DELIVERY APPROACH	ADDITIONAL INFORMATION
NATIONAL							
1	Research and Development Tax Incentive *Department of Industry, Science, Energy & Resources (DISER)*	Multiple	Business	Funding requirement	Tax offset	Self-R&D or procure	A tax benefit to offset some of the cost of eligible R&D activities. Either refundable or non-refundable depending on the company. Incentive for smaller businesses to use registered Research Service Providers to gain access to expert resources to conduct R&D. **This is discussed further in Box 4.1.**
2	Business Research and Innovation Initiative *DISER*	Multiple	Business, government	Funding requirement	Competitive grant	Self-R&D or partner	Aims to drive innovation within small to medium enterprises (SMEs) and government by encouraging SMEs to develop innovative solutions to public policy and service delivery challenges (through challenges proposed by Australian Government agencies). Includes feasibility and proof of concept grant stages.
3	Entrepreneurs' Programme *DISER*	Multiple	Business, government, research, industry	Funding incentive	Competitive grant	Self-R&D or partner	Supports commercialisation, job creation, capability building for small businesses, provision of market and industry information, and facilitation of access to expert advice on business management (between the private sector and researchers). Two components (Research Connections and Accelerating Commercialisation) support research translation.
4	Linkage funding *Australian Research Council (ARC)*	Multiple	Research, industry	Funding incentive	Competitive grant	Partner	Supports fundamental and applied research and research training through a national competitive approach. Incentives for researchers to partner with researchers throughout the national innovation system and internationally, and with industry. Includes Industrial Transformation Research Hubs, ARC Centres of Excellence and Linkage Projects.

#	MODEL	DISCIPLINE	SECTOR/ PARTICIPANTS	APPROACH TO COLLABORATION/ COORDINATION	FUNDING MECHANISM	DELIVERY APPROACH	ADDITIONAL INFORMATION
5	Industrial Transformation Research Hubs *ARC*	Multiple	Industry, higher education,	Funding requirement	Competitive grant	Partner	Funds research hubs, training centres and capacity building through industry-placements for researchers. Aims to improve collaboration to solve problems and develop new products, processes and services to transform industries.
6	ARC Centres of Excellence *ARC*	Multiple	Research, industry, non-profit, higher education, government, business	Funding requirement	Competitive grant	Partner	Centres of significant collaboration to support research. Aim to undertake highly innovative and transformational research on large-scale problems over long periods of time, link existing research strengths, strengthen and build new capacity for interdisciplinary and collaborative approaches, achieve global competitiveness.
7	Linkage Projects *ARC*	Multiple	Research, business, industry, community	Funding requirement	Competitive grant with matched funding requirement	Partner	Promotes the development of long-term, national and international strategic research partnerships to encourage the transfer of skills, knowledge and ideas and support commercialisation and other benefits. **This is discussed further in Case Study 1.**
8	Special Research Initiatives *ARC*	Multiple	Research	Funding requirement	Competitive grant	Partner	Funding for strategic capacity building and development of new and emerging fields of research to be globally competitive, deliver community benefits and respond to emerging opportunities or changing priorities.
9	Collaborative Research Networks Program *Department of Education, Skills and Employment (DESE)*	Multiple	Higher education	Competitive advantage Funding incentive	Competitive grant	Partner	Supports collaboration between smaller, regional and less research-intensive universities and other higher education institutions. It has been successful in improving collaboration in areas of common interest, and responding to national research and innovation needs. Funding ceased in 2016.
10	Rural R&D Corporations (RDCs)	Rural	Industry, government	Funding incentive	Competitive grant	Self-R&D, partner or procure	The RDCs are a mix of statutory and independent industry-owned companies (with expertise-based boards).

#	MODEL	DISCIPLINE	SECTOR/ PARTICIPANTS	APPROACH TO COLLABORATION/ COORDINATION	FUNDING MECHANISM	DELIVERY APPROACH	ADDITIONAL INFORMATION
							RDCs enable industry to have greater control and flexibility over the industry and foster market-driven R&D on a competitive basis among public and private providers. **This is discussed further in Case Study 2.**
11	Cooperative Research Centres Programme *DISER*	Multiple	Industry, research, community	Funding requirement	Competitive grant	Partner	Industry-led collaborations between industry, researchers and the community. Aim develop new technologies, products, and services to address major economic, environmental, and social challenges. CRCs also build capacity and skills.
12	Commonwealth Scientific and Industrial Research Organisation (CSIRO): Innovation Connections	Multiple	Business, research, government	Competitive advantage Commercial opportunity Funding incentive	Competitive grant, industry partnerships	Self-R&D or partner	Responsible for commercialisation and connecting and establishing partnerships between local companies with researchers. CSIRO aims to overcome technical challenges, implement innovative solutions and increase global competitiveness. CSIRO operates a range of programs, including researcher placements with SMEs and *Innovation Connections* (on behalf of DISER). **Innovation Connections is discussed further in Case Study 3.**
13	Defence Science and Technology Group *Department of Defence*	Defence	Business, research, government, community, industry	Competitive advantage Commercial opportunity Funding incentive	Competitive grant, industry partnerships	Self-R&D or partner	DST Group is a world leading science and technology organisation that leads external engagement (outreach), collaboration, and reputation management nationally and globally. It combines interdisciplinary expertise to address defence and national security challenges. DST Group operates funding programs, and provides access to facilities and technologies.
14	Industry Growth Centres Initiative *DISER*	Multiple	Business, research, government, industry	Competitive advantage Commercial opportunity Funding incentive	Competitive grant, industry partnerships, fee-for-service	Partner or procure	Industry Growth Centres Initiative (IGCI) is an industry-led approach focusing on six areas of competitive strength and strategic priority to Australia. Six Growth Centres drive innovation, productivity and competitiveness. This includes a strong focus on improving engagement within industry and between research, industry, business and government.

#	MODEL	DISCIPLINE	SECTOR/ PARTICIPANTS	APPROACH TO COLLABORATION/ COORDINATION	FUNDING MECHANISM	DELIVERY APPROACH	ADDITIONAL INFORMATION
15	National Collaborative Research Infrastructure Strategy *DESE*	Multiple	Business, research, government, industry	Funding incentive	Competitive grant with matched funding requirement	Self-R&D, partner or procure	Support for businesses to identify strategic research needs and opportunities, find expertise and research collaborations and gain access to research infrastructure. The Research Connections Facilitation grant provides businesses with direct access to research capability. It aims to stimulate growth and competitiveness by building connections, supporting commercialisation, funding research activities/procurement/placements.
16	Rapid Applied Research Translation *National Health and Medical Research Council and DISER, Health and Medical Research Office*	Medical	Research, clinical, higher education, community, non-profit, peak body	Funding incentive	Competitive grant	Partner	Encourages academic researchers and clinicians to collaborate to conduct transformative translational research improve health care delivery, services and the sustainability of the health care system.
17	Medical Research Commercialisation Fund	Medical	Research, clinical, industry, business	Funding incentive	Competitive grant, industry partnerships	Partner Investment fund	Provides investment funding to commercialise early-stage medical research and foster best practice commercialisation.
STATE AND TERRITORY MODELS							
18	NSW Knowledge Hubs *NSW Government*	Multiple	Business, research, industry association, government	Competitive advantage	Competitive grant, industry partnerships	Self-R&D or partner	Industry-led collaborative partnerships focused on NSW industry sectors. Hubs foster innovation and create common value by sharing information, directing research and collaborating. They support the development of a shared vision/strategy; promote sector-wide opportunities, collaboration and knowledge sharing; and advocate to government
19	NSW Adaptation Research Hub *NSW Government*	Climate change and adaptation	Business, research, industry association, government	Funding incentive	Partnerships, matched funding	Self-R&D or partner	Leverages multidisciplinary capabilities to conduct government-directed research and produce relevant and

#	MODEL	DISCIPLINE	SECTOR/ PARTICIPANTS	APPROACH TO COLLABORATION/ COORDINATION	FUNDING MECHANISM	DELIVERY APPROACH	ADDITIONAL INFORMATION
							practical research to directly inform decision making by NSW agencies and communities. **This is discussed further in Case Study 4.**
20	South Australia R&D Voucher Scheme *South Australia Government*	Multiple	Business, research	Funding incentive	Competitive grant with matched funding/ in-kind requirement	Partner	Aims to strengthen engagement, build R&D capacity and accelerate growth by developing innovative and sustainable solutions or testing product ideas/enhancements.
21	Western Australian Innovation Vouchers Programme[14] *Western Australia Government*	Multiple	Business, government, research	Funding incentive	Competitive grant with a required co-contribution	Self-R&D, partner or procure	Supports start-ups and SMEs to commercialise ideas and innovations and grow to create jobs. The program supports access to professional skills, services, or knowledge for R&D, product development, technology transfer and intellectual property and commercialisation support.
OTHER MEASURES							
22	Phenomics Australia	Biomedical	Research, clinical, industry	Competitive advantage Commercial opportunity	Industry partnerships, fee-for-service	Partner	This is a national network of research facilities and expertise. It coordinates infrastructure to create scale and optimise use of high-quality resources in a cost-effective manner. This enables discovery and translation. The Network focuses on building a skilled and collaborative workforce.
23	CBR Innovation Network	Multiple	Business, research, industry association, government, community	Competitive advantage Commercial opportunity	Partnerships, fee-for-service	Partner	A non-profit, open collaboration of innovators aimed at building capability and a diverse innovation ecosystem, enabling access to services/facilities and providing policy insights to government. Founded by CSIRO and ACT-based universities.

Source: Various – see Appendix A

[14] Similar programs operate in other states, for example Northern Territory: https://nt.gov.au/industry/business-grants-funding/business-innovation-program.

3 CASE STUDIES AND ASSESSMENT

The case studies presented below provide detail on applied R&D models. These have been chosen to canvas a range of options that could prove useful for the development of the Australian native seed sector. The focus of the case studies is on good practice approaches to applied R&D.

All case studies have been in operation for long enough to be able to offer insights on how they have worked in practice and provide important lessons for the Australian native seed sector.

The four case studies chosen are as follows, each is detailed below.

- ARC Linkage Projects
- Rural R&D Corporations (RDCs)
- CSIRO Innovation Connections
- NSW Adaptation Research Hub.

A discussion of the applicability and suitability of each case study to the native seed sector is provided in section 3.5.

3.1 Case Study 1 — ARC Linkage Projects

The ARC Linkage Projects have contributed to the development of the innovation ecosystem across disciplines since their establishment in 2013. Table 3.1 presents a summary of the ARC Linkage Projects model, with further details provided below.

TABLE 3.1. SUMMARY TABLE — ARC LINKAGE PROJECTS

FOCUS AND OBJECTIVES	Long-term, cross-sectoral strategic research partnerships to apply and transfer skills, advanced knowledge and ideas. Linkage Projects supports innovation and commercialisation. Funding is awarded across many disciplines.
APPROACH TO COLLABORATION	Collaboration is a funding requirement. The eligibility criteria require applicants to include at least one partner organisation and the applicant must be from an eligible organisation (43 Australian universities).
FUNDING MECHANISMS	Competitive grant with the requirement for at least matched funding or in-kind contribution.
DELIVERY APPROACH	Partnership between university-based researchers and those in other sectors, including, Australian and international business, industry, government (Commonwealth, state and territory, local), non-profits, and higher education.

Source: Various

KEY LESSONS

- Linkage Projects is an established model, which participants in the native seed sector could apply for
- Primary applicants (eligible universities) are required to engage with cross-sector participants
- Matched funding requirements would secure additional funding for the sector (with exemptions for non-profits and small businesses)

3.1.1 Objectives and funding

Linkage Projects promote the development of long-term, national and international strategic research partnerships. The model brings together key Australian and international research and innovation stakeholders from a range of sectors, including industry, business, higher education institutions, publicly-funded research agencies, government and end-users. It provides the opportunity for research to be conducted in collaboration with organisations outside the higher education sector.

Linkage Projects facilitate high-quality, world-class research that meets the needs of Australia's innovation system and build the scale and focus of research in Australian Government priority areas.[15] It encourages the application and transfer skills, advanced knowledge and ideas to support innovation and commercialisation.

The intended outcomes are:[16]

- the growth of a national pool of world-class researchers to meet the needs of the broader Australian innovation system
- economic, commercial, environmental, social and/or cultural benefits for Australia.

Linkage Project funding of $50,000–300,000 per year is available for 2–5 years. Funding can be used for personnel; teaching relief; expert third party services; access to infrastructure and facilities (including equipment and software); field research; equipment and consumables; publication and dissemination of outputs and outreach; travel; learning and collaboration activities (e.g. workshops and conferences); and essential support costs (e.g. for carers or those requiring care).[17]

[15] Australian Research Council. (2020). *Linkage Projects.*
[16] Grant Connect. (2020). Current Grant Opportunity View — GO4564.
[17] Australian Research Council. (2020). *Linkage Projects.*

Funding is awarded across many disciplines, including:

- Biological Sciences, Biotechnology, Environmental, Medical and Health Sciences (excluding medical research)
- Engineering and Technology
- Humanities and Creative Arts, Social, Behavioural and Economic Sciences and
- Physical, Mathematical and Information Sciences.

3.1.2 Opportunities for economic development

Linkage Projects intend to achieve "*economic, commercial, environmental, social and/or cultural benefits for Australia*". To target the available funding to areas of greatest opportunity, grant applications are assessed based on several criteria. One of these considers the intended benefits of the proposed project to the Australian economy, including the creation of jobs.[18]

Linkage Project recipients have a requirement to leverage government funding through matched funding/in-kind contributions. This stimulates further economic development by securing direct investments in the innovation ecosystem. For example, the 2019 funding round approved $78.2 million for 175 projects. These projects leveraged total cash and in-kind contribution of $126.6 million. This represents $1.62 from applicants for every dollar funded by the ARC. In total, 57 per cent of this funding was contributed by industry, 18 per cent by government and 17 per cent by the non-profit sector.[19]

3.1.3 Opportunities for capacity building

Linkage Projects intend to "*increase Australia's research and innovation capacity*". This is measured through Key Performance Indicators established in the annual ARC Portfolio Budget Statements and ARC corporate plan. Further, the applicants are required to demonstrate the intended benefit of the project to building capacity in the Australian Government's priorities, including the National Science and Research Priorities.[20]

3.1.4 Opportunities for engagement

Engagement is a requirement of this model. Applicants are assessed based on their capacity to "*engage in collaborative research with end-users*",[21] particularly between university-based researchers and those in other sectors. Applications are required to detail the proposed collaborative arrangements and governance processes.

[18] Australian Research Council. (2019). *Linkage Program (2019 edition).*
[19] Australian Research Council. (2020). *Selection Report: Linkage Projects 2019.*
[20] Ibid.
[21] Ibid.

3.1.5 Opportunities for innovation

Linkage Projects aim to stimulate investment in and build the capacity of the innovation ecosystem, thereby generating new knowledge, technologies, products and ideas.

To support more efficient collaboration and responsiveness to time-critical innovation opportunities, ARC implemented a continuous assessment process in 2016. This enabled acceptance of applications on a continual basis, with assessment of applications following three submission deadlines per year. Funding recommendations are made to the Minister within six months of application submission.[22] This aligns with the National Innovation and Science Agenda's (NISA) aims of boosting the commercial returns of publicly-funded research.[23]

3.1.6 Key lessons

Linkage Projects is an established and well-regarded applied R&D funding model. The core aims are to foster cross-sectoral collaboration, capacity building, economic development and innovation.

There is an opportunity for participants across the native seed sector to partner and apply for Linkage Projects. This would require the primary applicant to be from an eligible university, together with at least one cross-sectoral partner, for example, an industry member or small business.

Linkage Projects enable engagement with organisations with low cash-flow, by exempting certain partner organisations from the cash contribution requirements. This includes organisations that are predominant in the native seed sector, such as herbariums, non-profit organisations, museums and collecting organisations, small businesses and start-ups.

Securing Linkage Projects for the native seed sector would also recruit additional leveraged funding (to match that provided by the ARC) for applied R&D in the sector. This is necessary to support the economic development, capacity building, engagement and innovation potential of the sector.

3.2 Case Study 2 — Rural R&D Corporations

The Rural R&D Corporations (RDCs) have been a key feature of agricultural innovation since 1989 and are considered a successful government-industry partnership model.[24] Table 3.2 presents a summary of the RDC model. Further details are provided below.

[22] Australian Research Council. (2017). *Media Release: Continuous Linkage Projects: facilitating industry collaboration.*
[23] Australian Research Council. (2020). *National Innovation and Science Agenda Measures.*
[24] Department of Agriculture, Water and the Environment. (2020). *Rural Research and Development Corporations.*

TABLE 3.2. SUMMARY TABLE — RURAL R&D CORPORATIONS

FOCUS AND OBJECTIVES	The RDCs are a mix of statutory and independent industry-owned companies (with expertise-based boards). RDCs enable industry to have greater control and flexibility over the industry and foster market-driven R&D on a competitive basis among public and private providers. They drive coordination across rural disciplines.
APPROACH TO COLLABORATION	The RDCs collaborate with each other and across the sector to maximise outcomes for rural and regional Australia.
FUNDING MECHANISMS	Legislated and mandatory industry levy system with matching funding from the Australian Government.
DELIVERY APPROACH	Competitive grants and other industry services. Self-R&D, partner or procure across universities, industry and government.

Source: Various

KEY LESSONS

- RDCs are a successful and established R&D system with existing collaborative relationships in the agricultural, regional and environmental space (complementary to the native seed sector)
- AgriFutures Australia (one of the 15 RDCs) has an Emerging Industries Program, which is designed to develop industries through R&D and capacity building
- Depending on the size of the emerging industry a range of funding opportunities for projects is available with industry co-funding preferred in the early stages and required in later stages

3.2.1 Objectives and funding

There are 15 RDCs, five are statutory bodies under the Commonwealth and ten are industry-owned corporations (IOCs) (Refer Box 3.1). Their objective is to invest in R&D and innovation that improves the following features of the agricultural, forestry and fisheries industries:

- profitability
- productivity
- competitiveness
- long-term sustainability.

Each is established under legislation and the statutory RDCs have declared representative organisations. The Minister for Agriculture (reporting to Parliament) is responsible for the enabling legislation and has devolved some roles to the Department of Agriculture, Water and the Environment (DAWE), such as performance monitoring and contractual requirements.

Each RDC is governed by a board of directors which sets the direction for the RDC's operations.

The RDCs operate as industry services bodies that primarily manage R&D services. Some also provide additional industry services such as marketing.[25] To propose and assess R&D investments, RDCs typically establish panels that consist of a range of scientific and technical experts as well as levy payers.

The RDCs are responsible for the investment of approximately $1 billion a year and contract to a range of public and private research providers including universities, state governments and private researchers.

They are funded by primary producers and the Australian Government through a unique co-investment program consisting of mandated industry levies and matching government funds (for R&D only, not marketing) generally up to 0.5 per cent of the industry's gross value of production.

Funds are centrally collected and distributed to RDCs. DAWE are responsible for:

- administering the levies (on a cost recovery basis) through collection and disbursement mechanisms
- monitoring the system to ensure compliance through risk-based audits
- providing support for the establishment of a new levy or change to an existing levy.

[25] Some IOCs are set up differently for example Australian Pork Limited has an advocacy function and Sugar Research Australia conducts some of its own research.

Box 3.1 15 RDCS AND OWNERSHIP STRUCTURES

Statutory RDCs:

1. Australian Grape and Wine Authority (known as Wine Australia)
2. Cotton Research and Development Corporation (CRDC)
3. Fisheries Research and Development Corporation (FRDC)
4. Grains Research and Development Corporation (GRDC)
5. Rural Industries Research and Development Corporation (RIRDC) (trading as AgriFutures Australia)

Industry-owned RDCs:

6. Australian Egg Corporation Ltd (AECL)
7. Australian Meat Processors Corporation (AMPC)
8. Australian Pork Ltd (APL)
9. Australian Wool Innovation Ltd (AWI)
10. Dairy Australia Ltd (DA)
11. Forest and Wood Products Australia (FWPA)
12. Horticulture Innovation Australia Ltd (Hort Innovation)
13. LiveCorp
14. Meat and Livestock Australia (MLA)
15. Sugar Research Australia (SRA).

Source: Department of Agriculture, Water and the Environment. (2020). Rural Research and Development Corporations

3.2.2 Opportunities for economic development

Australia's agricultural and rural sector employs more than 1.5 million people, and the agricultural supply chain contributes 12 per cent to Australia's gross domestic product.[26]

The RDC system stimulates economic development for the agricultural, forestry and fisheries sector and regional communities and its:

> *Strategic, targeted and regionally relevant research and development delivers real benefit to Australia's primary producers and to Australia as a whole.*
>
> Council of Rural Research and Development Corporations

[26] Rural R&D Corporations. (2021). *Rural Innovation in Australia.*

In 2018–19, the RDCs' return on investment was reported as 5.6:1, meaning for every dollar invested the system returns an economic benefit of $5.60.[27]

3.2.3 Opportunities for capacity building

Capability and capacity is critical for the future of innovative agricultural R&D. Working to develop Australia's future scientists and social policy experts and provide benefits to the RDCs, the agricultural sector, regional areas and the broader Australian society.

The RDC system is responsible for building capability in the agricultural sector. In 2019–20, it sponsored over 200 PhD and post-doctoral researchers.[28]

3.2.4 Opportunities for engagement

RDCs are required to engage with their levy payers and stakeholders and do so through a variety of mechanisms. As funders, levy payers are supported by representative organisations and are involved in the strategic planning processes and direction of RDCs. The RDCs are committed to collaboration between researchers, investors, governments, primary producers and agri-businesses.[29]

RDCs collaborate with each other on projects that are cross-sectoral in nature and in an effort to reduce duplication of research in areas that impact all RDCs (e.g. digital agriculture).[30] In 2019–20, RDCs collaborated on over 400 projects with a value of $86 million.[31] This leads to better value for money, less duplication and more indirect value for regional communities and the environment.

In addition, there was a new cross-sectoral body established in 2020, Agricultural Innovation Australia, which has been tasked with ensuring a greater focus on cross-sectoral research on behalf of the whole RDC system.[32]

3.2.5 Opportunities for innovation

Innovation is central to the RDCs remit and its success over the last 30 years. Innovation is necessary to leverage current and emerging opportunities.

3.2.6 Key lessons

RDCs are a successful and established R&D system with existing collaborative relationships in the agricultural, regional and environmental space (complementary to the native seed sector).

Opportunities exist for the native seed sector to use the existing RDC structure to develop its R&D platform.

[27] Agtrans Research. (2019). *Cross-RDC Impact Assessment 2019.*
[28] ACIL Allen research from personal communication and RDC annual reports.
[29] Rural R&D Corporations. (2021). *Rural Innovation in Australia.*
[30] CRDC. (2021). *Accelerating Precision to Decision Agriculture.*
[31] Ibid.
[32] Agricultural Innovation Australia. (2021). *Members.*

One such idea would be consideration of the native seed sector as an 'emerging industry' which would allow it to fall under the remit of AgriFutures Australia (refer Box 3.2).

Box 3.2 AGRIFUTURES AUSTRALIA AND R&D FOR EMERGING INDUSTRIES

AgriFutures Australia, through its 'Emerging Industries Program (EIP) Strategy' supports a number of emerging rural industries including native plants such as Kakadu plum and native pepper.

The EIP takes a phased approach to industry development through research, development and extension (RD&E) from 'Prospecting' through 'Growing industry capability' to 'Consolidation' (Refer Figure 3.1).

Research funding is provided by AgriFutures Australia (and typically includes voluntary industry contributions) where there is a clear commercial growth strategy for developing an emerging industry through R&D.

Applications are made to an advisory panel with the following functions:

- Advising on the current state of emerging rural industries through appreciation of:
  - business opportunity, and business planning
  - industry impact of R&D, the business case for R&D and any constraints:
    - markets, market access, supply and value chains
    - the challenges of start-up
    - industry building.
- Providing recommendations on short-listed research applications consistent with the research priorities identified by AgriFutures Australia.
- Advising on and assisting with the dissemination, adoption and commercialisation of R&D.
- Encouraging partnerships, industry contributions and co-investment by other stakeholders to support RD&E to establish commercially viable and sustainable rural industries.

Source: AgriFutures Australia. (2021). What is an emerging industry? and AgriFutures Australia. (2021). About the Agrifutures Emerging Industries Advisory Panel

FIGURE 3.1. AGRIFUTURES AUSTRALIA EIP STRATEGY

Investment details	Phase 1 Prospecting Building early-stage clusters	Phase 2 Reaching $10M GVP Growing industry capability	Phase 3 Consolidation Expanding toward established and/or levied industries
Industry Size (GVP)	<$2 million	$2-10 million	$10 million+
Maximum AgriFutures Australia Funding support per project	$50,000	$400,000	$500,000
Maximum funding duration	1 year only	Up to 2 years	Up to 2 years
Funding contribution (direct*)	Co-contribution desirable	Mandatory minimum co-contribution of 25% of AgriFutures contribution	Mandatory minimum co-contribution of 50% of AgriFutures contribution

*Direct costs of a project are those which would not be incurred unless the project took place e.g. salary, salary on costs, lab supplies, travel etc.

Source: *https://www.agrifutures.com.au/rural-industries/emerging-industries/*

3.3 Case Study 3 — CSIRO Innovation Connections

The CSIRO Innovation Connections supports businesses to connect with the research sector to conduct applied R&D across multiple disciplines. Table 3.3 presents a summary of the CSIRO Innovation Connections model, with further details provided below.

TABLE 3.3. SUMMARY TABLE — CSIRO INNOVATION CONNECTIONS

FOCUS AND OBJECTIVES	CSIRO is responsible for commercialisation and connecting and establishing partnerships between local companies and researchers. CSIRO aims to overcome technical challenges, implement innovative solutions and increase global competitiveness. CSIRO operates a range of programs, including researcher placements with SMEs. CSIRO operates Innovation Connections on behalf of the Department of Industry, Science, Energy & Resources. This is a 'match-making' service that connects researchers, businesses and investors to commercialise products, innovate and solve problems. It aims to grow jobs, profits, exports and resilience. Innovation Connections also provides access to a competitive matched funding grant. Innovation Connections supports engagement across multiple disciplines.
APPROACH TO COLLABORATION	Collaboration is driven by the potential for competitive advantage and commercial opportunity. The Innovation Connections Grants provide a funding incentive for businesses to collaborate with a publicly-funded research organisation.
FUNDING MECHANISMS	Innovation Connections provides access to competitive grant funding.
DELIVERY APPROACH	The delivery approach involves self-R&D or partnering across business, research and government.

Source: Various

KEY LESSONS

- Innovation Connections is an established model that businesses in the native seed sector could apply for
- Businesses are limited to applying for a project in an area of government priority
- Businesses are required to engage with the research sector
- Matched funding requirements would secure additional funding for the sector (with lower requirements for regional businesses)

3.3.1 Objectives and funding

CSIRO aims to overcome technical challenges, implement innovative solutions and increase global competitiveness. It is responsible for commercialisation and connecting and establishing partnerships between local companies and researchers. CSIRO operates a range of programs, including researcher placements with SMEs.[33,34]

[33] CSIRO. (2021). *Innovation Connections.*
[34] Department of Business. (2021). *Innovation Connections.*

CSIRO operates *Innovation Connections* on behalf of the Department of Industry, Science, Energy & Resources. This is part of the Entrepreneurs' Programme, an Australian Government program that provides expert advice and financial support to businesses to progress their goals.[35]

Innovation Connections is a 'match-making' service that connects businesses with researchers and investors. It aims to:[36]

- support businesses to understand their research needs, find appropriate expertise in the research sector and fund collaborative research projects
- commercialise products, innovate and problem solve
- grow jobs, profits, exports and resilience.

Innovation Connections operates in two parts: Innovation Connections Facilitation and Innovations Connections Grants.

Innovation Connections Facilitation provides participants with expert advice and mentorship through a team of facilitators

The facilitators support businesses to achieve their vision, and guides them to work with the research sector to develop innovative solutions; become more competitive and productive; attract investors; and commercialise products.[37] Facilitators generate a report of each business's research needs and opportunities. They may recommend further support through an Innovation Connections Grant.

Innovation Connections Grants are a competitive, matched funding grant

They support businesses to work with a publicly-funded research organisation. Funding is available for up to two researcher or business research placement grants and one graduate placement grant:

- Researcher Placement — a researcher is placed in a business to collaboratively develop and implement a new idea with commercial potential (up to $50,000).
- Business Researcher Placement — a business's employee is placed into a publicly-funded research organisation (e.g. CSIRO, Australian university), to work on a collaborative project and/or access equipment and infrastructure (up to $50,000).
- Graduate Placement — a graduate or postgraduate is employed to undertake a research project for 6–12 months (up to $30,000).

[35] Department of Business. (2021). *Entrepreneurs' Programme.*
[36] CSIRO. (2021). *Innovation Connections.*
[37] Ibid.

Innovation Connections provides support and funding to SMEs with an annual turnover or operating expenditure between $1.5–100 million (or more than $750,000 for those in remote regions). Businesses are required to make matched cash contributions.

Businesses must work in one of the disciplines, defined by the Industry Growth Centres Initiative (see Table 2.1) growth sectors:

- Advanced Manufacturing
- Food and Agribusiness
- Medical Technologies and Pharmaceuticals
- Mining Equipment, Technology and Services
- Oil, Gas, and Energy Resources

or provide enabling technologies and services (e.g. ICT) to a business working in one of the growth sectors.

3.3.2 Opportunities for economic development

To receive Innovation Connections funding, businesses are required to make a cash contribution that matches the value of the grant. This stimulates further economic development by securing direct investments in the innovation ecosystem.

The program also provides support to business to build their competitiveness and productivity, attract investors and commercialise their products. These activities all have the potential to contribute to economic development in Australia.

Further, Innovations Connections Facilitators provide a linking service to the broader Entrepreneurs' Programme, which provides ongoing support for businesses to attract financial assistance and grow and scale their businesses.

3.3.3 Opportunities for capacity building

Innovation Connections projects operate for 2–12 months. As such, the program has the potential to provide the sustained support required to transfer knowledge and build skills across participants (businesses and researchers).

A requirement of grant funding is for businesses to:

> *'demonstrate they are committed to, and have the skills, capability, intellectual property or expertise to operate in, one of the growth sectors in the future'.*[38]

This seeks to directly build the capacity of the growth sectors, which are areas of competitive strength and strategic priority to Australia.[39]

[38] Department of Business. (2021). *Innovation Connections.*
[39] Department of Industry, Science, Energy and Resources. (2021). *Industry Growth Centres.*

3.3.4 Opportunities for engagement

Innovation Connections builds cross-sectoral engagement and collaboration by:

- supporting sectors and disciplines to come together to share expertise and conduct collaborative research
- providing links to the broader innovation ecosystem through the Entrepreneurs' Programme, to support businesses to scale.[40]

3.3.5 Opportunities for innovation

Innovation Connections is designed primarily to drive innovation in six national priority areas for Australia. Grants can be accessed at any time, which enables timely access to funding to pursue time-critical innovation opportunities.

3.3.6 Key lessons

Innovation Connections is an established and well-regarded applied R&D funding model. The core aims are to foster cross-sectoral collaboration, capacity building, economic development and innovation.

There is an opportunity for businesses in the native seed sector to apply for Innovation Connections, and for researchers to be engaged to provide research support or to host business participants. This requires the primary applicant to be from an eligible business (see section 3.2.1) and to demonstrate the contribution of their work to one of the growth sectors. This is most likely to be Food and Agribusiness.

Innovation Connections supports engagement by regional businesses by lowering the required annual turnover or operating expenditure to $750,000 (from $1.5 million) for those in remote regions. This may benefit some native seeds organisations operating in remote areas.

Securing Innovation Connections projects for the native seed sector would recruit additional leveraged funding (to match that provided by government) for applied R&D in the sector. This is necessary to support the economic development, capacity building, engagement and innovative potential of the sector.

3.4 Case Study 4 — NSW Adaptation Research Hub

The NSW Adaptation Research Hub (the Hub) has contributed applied R&D to the innovation ecosystem in the climate change and adaptation discipline since its establishment in 2013. Table 3.4 presents a summary of the Hub model, with further details provided below.

[40] Department of Business. (2021). *Entrepreneurs' Programme.*

TABLE 3.4. SUMMARY TABLE — NSW ADAPTATION RESEARCH HUB

FOCUS AND OBJECTIVES	Conducts applied R&D on government priorities to produce relevant and practical research to directly inform decision making by NSW agencies and communities. Drives engagement across the discipline of climate change and adaptation.
APPROACH TO COLLABORATION	The funding provides an incentive to collaborate across NSW research agencies, government, non-profits, communities and industry.
FUNDING MECHANISMS	The Hub is funded by the NSW Government, with matched funding from the research consortia and other funding bodies.
DELIVERY APPROACH	Self-R&D or partner across businesses, research agencies, industry associations, governments.

Source: Various

KEY LESSONS

- The model enables government to direct applied R&D to priority areas
- The Nodes and Node projects facilitate cross-sectoral partnerships

3.4.1 Objectives and funding

The Hub was the first of its kind for NSW government-funded collaborative research. Delivered by the Department of Planning, Industry and Environment (DPIE), it worked to inform decision making through cross-sectoral applied R&D.

This model identified government priorities and intended outcomes to be achieved through the Hub. Collaborative partnerships (or Nodes) were assembled to undertake activities to achieve the intended outcomes.

The objectives of the Hub were to:

- foster integrated climate impacts and adaptation research in the NSW university sector to enable effective climate change adaptation in NSW
- cost effectively deliver priority knowledge for the Department and its customers
- ensure transfer of skills and knowledge between the university sector, Government staff and the communities that the Department serves, specifically regional communities.

Research was structured under four Nodes. These were collaborative partnerships between research institutes and universities, with government oversight:[41]

- **Biodiversity Node** — focused on adaptation to climate variability and integrating decision-making to optimise biodiversity outcomes. Delivered by Climate Futures, Macquarie University and CSIRO.

[41] AdaptNSW. (2021). *Adaptation Research Hub.*

- **Adaptive Communities Node** — focused on community adaptation and response to extreme events and climate variability. Delivered by Institute for Sustainable Futures, University of Technology Sydney and CSIRO.
- **Coastal Processes and Responses Node** — focused on coastal and estuary impact assessment, risk management and adaptation. Delivered by Sydney Institute of Marine Science and UNSW Australia.
- **Human Health and Social Impacts Node** — focused on protecting and promoting health, strengthening health service delivery, understanding vulnerability and building resilience. Delivered by the Department, University of Sydney, NSW Health and Edge Environment.

The Nodes reflected critical gaps in government and scientific climate knowledge at the time.

Initially funded at $2.75 million for three years, the Hub was approved for two funding extensions in 2016 and 2017, with the addition of the Human Health and Social Impacts Node in 2017.

3.4.2 Opportunities for economic development

The Hub indirectly created opportunities for economic development by enabling effective adaptation to climate change. This includes knowledge and skills transfer across the university, government and community sectors.

3.4.3 Opportunities for capacity building

The Hub model was specifically designed to support knowledge and skill transfer from researchers to the NSW Government and other climate change adaptation practitioners. This largely occurred through the applied R&D outputs such as workshops, webinars, forums, symposiums, conferences and masterclasses with government staff. The Nodes also created tools and datasets to facilitate the transfer knowledge to decision-makers (largely, the NSW Government) and academic research articles to transfer knowledge to the broader researcher community.

3.4.4 Opportunities for engagement

The Nodes were partnerships between research organisations and government, that aimed to reduce silos and support cross-sectoral collaboration.

The Nodes engaged across sectors by:

- delivering collaborative research projects
- engaging in the annual AdaptNSW Forums
- designing outputs to be community-focused, through the use of roadshows (particularly in regional communities), development of school resources and engagement with local land managers in NSW.[42,43]

[42] AdaptNSW. (2021). *Adaptive Communities Node.*
[43] AdaptNSW. (2021). *Coastal Processes and Responses.*

The Adaptive Communities Node has focused on exploring Regional Innovation Systems, which are groups of organisations and individuals that produce knowledge through R&D and collective learning activities.[44]

3.4.5 Opportunities for innovation

As noted in section 3.4.1, the model was the first of its kind for NSW government-funded collaborative research. The Hub was an opportunity to test a new model for government-directed applied R&D.

The model also provided the opportunity for innovative research to be conducted on climate change and adaptation, with a view to identifying innovative approaches to support businesses to adapt to climate change.

3.4.6 Key lessons

The model provided an opportunity for government to direct applied R&D to specifically meet policy and planning priorities. By establishing four Nodes, the NSW Government fostered four strong partnerships between universities, publicly-funded research organisations and government. Through Node projects, the benefits of the R&D were extended to communities, businesses and industry.

If government is seeking to undertake priority-driven research in the native seed sector, this model provides a structure for directing capacity building, engagement and innovation. However, government responsibility for native seeds is dispersed across Commonwealth, state and territory, and local governments. This makes it difficult to implement a model that requires a clear policy focus and unity of direction and purpose.

In the absence of coordinated government direction, there is value in using this partnership approach to drive cross-sectoral collaboration. The model could have a stronger focus on economic development by including this as a specific focus/objective.

3.5 Suitability and applicability to Australia

Figure 3.2 presents the applicability and suitability of each of the four case studies to the native seed sector. The assessment indicates the suitability of each model as low, medium or high.

Two of the four case studies (Case Study 1 — ARC Linkage Projects and Case Study 2 — Rural R&D Corporations) were assessed as being highly suitable for the native seed sector as it is an existing applied R&D funding model that organisations or the native seed sector could readily apply for.

Case Study 3 — CSIRO Innovation Connections is also an existing model that businesses and researchers could readily apply for. However, it has been rated medium on its suitability for the native seed sector as businesses and researchers would need to demonstrate that they

[44] AdaptNSW. (2021). *Adaptive Communities Node.*

intend to contribute to a growth sector (i.e. Advanced Manufacturing or Food and Agribusiness). As such, not all organisations would be eligible.

Case Study 4 — NSW Adaptation Research Hub was identified as a useful partnership model that focuses on applied R&D directed towards policy objectives. This model started with identifying the intended outcomes to be achieved and then assembled partnerships and activities to drive progress towards the outcomes. It has been rated medium on its suitability for the native seed sector as the model requires considerable government investment and coordinated policy effort. This is unlikely to occur due to the dispersed responsibility across for native seeds across Commonwealth, state and territory, and local governments. However, the model does provide a useful framework for coordinating across sectors to design and achieve outcomes-driven applied R&D.

FIGURE 3.2. SUITABILITY OF KEY FRAMEWORKS TO THE NATIVE SEED SECTOR (LOW, MEDIUM AND HIGH)

Case study #	Model	Suitability to the native seeds sector (low, medium, high)	Additional comments
1	ARC Linkage Projects	High	Native seeds organisations are elibible to apply for this existing model.
2	Rural R&D Corporations: Agrifutures	High	Native seeds as a sector would be well placed to consider AgriFutures Australia's Emerging Industries Program.
3	CSIRO Innovation Connections	Medium	Native seeds businesses and researchers are eligible to apply for this existing model, provided they intend to contribute to a growth sector.
4	NSW Adaptation Research Hub	Low	Applying this model would require considerable government investment and coordinated policy effort. This is unlikely due to the dispersed responsibility for native seeds.

Source: ACIL Allen

4 CROSS-SECTORAL MODELS — A DRAFT FRAMEWORK FOR THE NATIVE SEED SECTOR

Applied R&D in the native seed sector is fragmented and lacks transparency. A novel approach is needed to guide applied R&D and cross-sectoral collaboration across the conservation seedbank, research, higher education and industry sectors.

An important part of industry development is R&D. As such, R&D has been acknowledged as a key focus area in the development of the native seed sector strategy. R&D was a discussion topic in a series of eleven workshops conducted to inform the Strategy in April 2021.

The key findings from these workshops related to R&D were:

- The challenges with conducting R&D in the native seed sector are:
  - The small scale of funding creates silos and competition and forces the sector to focus on only a small area of the required research.
    - Limited funding also means that only a few researchers are supported.
    - Grants should focus on cross agency/collaborative issues.
    - There is a need for alternate funding for R&D through commercial streams.
  - There is no consistent support to breakdown silos between:
    - researchers
    - between basic research and applied research.
  - Funding has a short-term outlook. Support is needed for longer-term projects that are working to achieve longer-term outcomes.
  - Support should be top down and coordinated at federal and state government levels.
- There are opportunities to:
  - better match resource and skill availability, and leverage private businesses and Traditional Owner priorities and knowledge to conduct/support R&D
  - use conferences to convey information
  - better incorporate understanding of genetics and climate change into restoration
  - conduct R&D on seed banking techniques, seed ecology, germination, taxonomic and genetic issues, species protection.

An overview of workshop participants is provided in Appendix B.

The case studies presented in Section 3 provide examples of applied R&D models, with key lessons that can be applied to the native seed sector. These lessons have informed the development of a Draft Framework for applied R&D in the native seed sector.

4.1 A Draft Framework for applied R&D

The draft framework proposes that applied R&D should:

- be guided by a national cross-sectoral advisory body
- have work programs/activities and partnerships that are driven by the sector's intended outcomes
- be supported by an online knowledge sharing and collaboration platform and annual fora
- leverage opportunities to secure funding from existing models.

These actions are overviewed in Table 4.1, and described below, according to three time horizons: short, medium and long-term.

TABLE 4.1. APPLIED R&D ACTIONS AND TIME HORIZONS

TIME HORIZON	ACTION
Short-term	• Leverage opportunities to secure funding from existing models. • Establish a national cross-sectoral advisory body. • Engage with the sector to develop R&D priorities.
Medium-term	• Identify R&D intended outcomes, priorities and activities, guided by the advisory body. • Identify appropriate cross-sectoral partnerships based on intended outcomes. • Build and promote a knowledge sharing and collaboration platform and host annual fora.
Long-term	• Deliver R&D according to the sector's intended outcomes and guided by the advisory body. • Monitor progress against intended outcomes, the effectiveness of the advisory body and the appropriateness and efficiency of the model.

Source: ACIL Allen

4.1.1 Advisory body

A national cross-sectoral advisory body should be established to:

- identify applied R&D priorities and objectives
- design activities
- coordinate cross-sectoral collaboration
- perform monitoring and evaluation of the model and activities
- support promotion and distribution of the research outputs.

The advisory body could resemble that used by AgriFutures Australia (Case Study 2 — Rural R&D Corporations, Box 3.1), whereby a cross-sectoral steering committee jointly agrees on planning for the industry. This would ensure a breadth of engagement across the sector and help reduce duplication and overlap and make the best use of limited available resources.

The advisory body should be well-resourced and adequately fund longer-term collaboration and outcomes-driven applied R&D.

4.1.2 Outcome-driven agenda

Applied R&D should be driven by the sector's intended outcomes. This approach was used by the NSW Government, as overviewed in Case Study 4 — NSW Adaptation Research Hub. The nature of the applied R&D activities will inform the work programs/activities, the opportunities available for partnership and the prioritisation of funding across projects.

This should consider:

- the location, expertise, and experience of each partner
- access to funding, infrastructure and facilities
- balancing responsiveness of emerging opportunities with a focus on long-term funding.

The outcome-driven agenda should clarify the incentives for each sector to collaborate. This is essential for effective coordination.[45] Ultimately, the sustainability of the Draft Framework depends on whether it is valued by the sector.

4.1.3 Knowledge sharing platform and fora

To support cross-sectoral applied R&D, the native seed sector needs an online platform for sharing knowledge, expertise and project findings. The platform will provide an innovative approach to communicating information on the sector. It will improve the efficient use of resources and reduce the potential for duplication and/or overlap across activities. The platform will enable better coordination and leverage of skills and expertise.

The online platform should:

- raise awareness of resources available to the sector (funding, expertise and infrastructure)
- identify the intended outcomes and objectives of the applied R&D
- track progress towards the intended outcomes and objectives
- facilitate knowledge sharing of applied R&D findings
- provide a match-making platform to link participants and facilitate collaboration and problem solving.

This approach would be similar to the function performed by the Innovations Connections Facilitators (see Case Study 3).The platform should be overseen by the advisory body.

In addition, an annual applied R&D forum would be useful in bringing together the sector to share progress and discuss ongoing applied R&D priorities.

4.1.4 Leveraging existing funding

There are many existing funding models (see Table 2.1) that native seed sector participants could apply for. Three of these are the ARC's Linkage Projects (Case Study 1), Rural R&D Corporations (Case Study 2) and CSIRO's Innovation Connections (Case Study 3). These funding models could be used in the short-term to strengthen existing collaborations, or develop smaller-scale collaborations.

[45] Frontier Economics. (2006). *National framework for Primary Industries Research, Development and Extension – Economic Considerations.*

Businesses in the native seed sector could also leverage the Australian Government R&D Tax Incentive to offset some of the cost of eligible R&D activities (see Box 4.1). This was not explored as a case study as it is not a collaborative model. However, it incentivises applied R&D for relevant businesses.

Box 4.1 AUSTRALIAN GOVERNMENT R&D TAX INCENTIVE

The Research and Development Tax Incentive (RDTI) is operated by the Australian Government Department of Industry, Science, Energy & Resources and administered jointly by Industry Innovation and Science Australia and the Australian Taxation Office.

The RDTI is a national scheme that provides a tax benefit to offset some of the cost of eligible R&D activities. The RDTI provides an incentive for smaller businesses to use registered Research Service Providers (RSPs, universities, CSIRO and private companies that are approved by the Australian Government) to gain access to expert resources to conduct R&D.

The objectives of the RDTI are to boost competitiveness and productivity across the economy by:

- encouraging industry to undertake additional R&D that may not otherwise be conducted
- incentivising smaller firms to undertake R&D
- supporting businesses in a predictable and less-complex way.

Businesses can receive a tax offset for eligible applied R&D activities undertaken by themselves or registered RSPs through procurement. Depending on the company, the offset is either:

- refundable, if the business has a turnover of less than $20 million and is in a tax loss position
- non-refundable for all other businesses.

The offset is available across multiple disciplines.

The native seed sector could apply for the RDTI using the following approaches.

Single farm — registered service provider (RSP)

- Promotes collaboration between a farm and an external researcher.
- A farmer (who has an incorporated company) can spend less than $20,000 on the eligible research activity. It must enter into an agreement to pay the RSP.
- The farmer must organise the expenditure through a Pty Ltd company that is not a trust, or acting as the trustee of a trust or through a Partnership.

Individuals — holding company

- Individuals (from different farms, not necessarily Pty Ltd companies or partnerships) can group together to form a 'new' Holding Company.
- Its purpose is to build knowledge from R&D to benefit those individuals (shareholders).
- The company shares knowledge, mainly to the establishing individuals, and to others.
- The company is the R&D Tax applicant. It could work with a RSP or conduct its own R&D.
- The individual farmers could invoice the Company for eligible R&D activities in addition to other eligible activities. The R&D Tax cash benefit can be distributed by the Company to the shareholders, as dividends.
- The Company may build intangible and tangible IP that is shared within the company.

Separate companies (i.e. the farmers) form a partnership

- A Partnership of eligible companies is an eligible entity under the R&D Tax legislation. Each company must be a Pty Ltd, not a trust or acting as the trustee of a trust.
- Allows separate companies to formally hold their own IP, making it easier to determine the Technical Objectives, Existing and New Knowledge required for the R&D Tax application.
- Funding in can be in proportion to the funding out to the partners.

This model resembles existing industry partnerships formed around different sectors (such as Horticulture, Beef, Fisheries). As per the Industry groups, a levy could be applied to the participating Companies and that levy may be eligible for the R&D Tax Incentive.

Sources:
https://www.ato.gov.au/business/research-and-development-tax-incentive/about-the-program/
https://www.industry.gov.au/funding-and-incentives/research-and-development-tax-incentive
https://business.gov.au/grants-and-programs/research-and-development-tax-incentive/help-guides-and-resources/research-service-providers
Tim Charlton, PhD and Alan Green (Director), International Technology Group Pty Ltd., personal communication 3 May 2021.

4.1 Opportunities for economic development through the Draft Framework

All four case studies aimed to stimulate economic development in Australia through applied R&D. This was both an explicit goal of the model and part of the section criteria for applicants.

By identifying the opportunity for economic development as a key objective of the Draft Framework, the advisory body could guide applied R&D priorities and collaborations with a view to building the economic value of the native seed sector and its potential to grow Australia's economy.

4.2 Opportunities for capacity building through the Draft Framework

The Draft Framework would create opportunities to build the capacity of the sector by:

- leveraging existing models such as AgriFutures Australia's Emerging Industries Program (refer Box 3.1)
- supporting cross-sectoral partnerships by identifying intended outcomes, priorities and activities to guide applied R&D
- sharing knowledge, expertise, and infrastructure through partnerships and the online platform and annual fora
- building awareness of sector participants through the online platform and annual fora.

Greater transparency and guidance would improve the efficient use of the sector's limited resources.

4.3 Opportunities for engagement through the Draft Framework

The Draft Framework provides opportunities for engagement across the native seed sector. This should break down silos between research, industry, government, non-profit, business, Traditional Owners and community.

Engagement arrangements should only be defined after the intended outcomes, priorities and activities have been identified. This will ensure that engagement is fit-for-purpose and outcome-driven. Successful collaboration will require continued, longer-term funding to support.

Examples of sector participants is provided in Table 4.2 according to the key sectors involved in native seeds: government; non-government, non-profit and conservation seed banks; commercial; professional organisations and networks; tertiary sector and government-funded organisations; and international organisations. Traditional Owners are present across multiple sectors, including non-government, non-profit and conservation seedbanks; commercial; and professional organisations and networks.

TABLE 4.2. NATIVE SEED SECTOR PARTICIPANTS INVOLVED IN APPLIED R&D

GOVERNMENT	NON-GOVERNMENT/ NOT-FOR-PROFIT/ CONSERVATION SEEDBANKS	COMMERCIAL	PROFESSIONAL ORGANISATIONS/ NETWORKS	TERTIARY SECTOR	INTERNATIONAL ORGANISATIONS
• Australian Government, Department of Agriculture, Water and the Environment (Environment Restoration Fund; National Landcare Program) • The Office of the Threatened Species Commissioner • CSIRO • Parks Australia • State Government environment departments • Catchment Management Authorities (VIC) • Local Land Services (NSW) • Western Australian Department of Biodiversity	• Alice Springs Desert Park • Australian National Botanic Gardens • Australian Native Plant Society Canberra • Australian Plant Society Tasmania • Australian Plants Society Victoria • Australian Seed Bank Partnership • Australian Wildlife Conservancy • Botanic Gardens and State Herbarium of South Australia • Brisbane Botanic Gardens Conservation Seed Bank • Bush Heritage Australia • Conservation Collective • Conservation Volunteers Australia • Council of Heads of Australian Botanic Gardens • George Brown Darwin Botanic Gardens • Kings Park, Botanic Gardens and Parks Authority	• Commercial seed collectors • Restoration practitioners • Nurseries • Traditional Owner groups • Landholders and land managers • Greening Australia • Alcoa of Australia Limited • Kalbar Resources	• Australian Association of Bush Regenerators • Australian Network for Plant Conservation • Australian Seed Federation • Australasian Institute of Mining and Metallurgy • Australian Local Government Associations • Australian Native Plants Society • Botanic Gardens Association of Australia and New Zealand • Environmental Consultants Association • Ecological Society of Australia • Greenlife Industry Australia (formerly NGIA) • National Indigenous Australians Agency • RegenWA • Revegetation Industry Association of WA • Society of Ecological Restoration Australasia	• Australian National University • Charles Darwin University • Charles Sturt University • Clean Air and Urban Landscapes Hub • Cooperative Research Centre for Contamination Assessment and Remediation of the Environment (CRC CARE) • Cooperative Research Centre for Transformations in Mining Economies (CRC TiME) • Curtin University • Deakin University • Edith Cowan University • Federation University • Flinders University • Griffith University • James Cook University • La Trobe University • Macquarie University • Murdoch University	• International Network for Seed-based Restoration • International Union for the Conservation of Nature • Society of Ecological Restoration • UN Environment Program

GOVERNMENT	NON-GOVERNMENT/ NOT-FOR-PROFIT/ CONSERVATION SEEDBANKS	COMMERCIAL	PROFESSIONAL ORGANISATIONS/ NETWORKS	TERTIARY SECTOR	INTERNATIONAL ORGANISATIONS
Conservation and Attractions • Australian Institute of Aboriginal and Torres Strait Islander Studies	• Landcare Australia • Native Plants Queensland • NRM Regions Australia • Planet Ark and National Tree Day • Royal Botanic Garden Sydney • Royal Botanic Gardens Victoria • Royal Tasmanian Botanical Gardens • SEEDS Bushland Restoration • South Australian Plants Society • South Australian Seed Conservation Centre • The Nature Conservancy • The Royal Botanic Gardens and Domain Trust • Top End Native Plant Society • Traditional Owner groups • Wildlife Society of Western Australia		• Terrestrial Ecosystem Research Network	• Threatened Species Recovery Hub • University of Adelaide • University of New England • UNSW • University of Queensland • University of Tasmania • University of the Sunshine Coast • University of Western Australia • University of Wollongong • WA Biodiversity Science Institute • Western Sydney University	

Note: this table is indicative only. Some organisations will perform multiple roles across the sector, yet are only indicated once.

Source: Various — see Appendix A (Bibliography), Dr Lucy Commander, personal communication 30 April 2021

4.4 Opportunities for innovation through the Draft Framework

The proposed Draft Framework is, in itself, an innovative way for applied R&D to be conducted and communicated in the native seed sector. This Framework would need to be continually monitored and reviewed to ensure that it:

- remains appropriate for the sector as the sector scales and matures
- is effective in building cross-sectoral collaboration
- achieves the intended outcomes
- makes efficient use of limited resources (with low duplication/overlap).

Continual review will enable adaptive management of the model, with a view to maximising its potential to foster innovation.

The Draft Framework would identify areas for innovation through the applied R&D priorities. Potential high-level key themes could be:

- Biodiscovery — novel uses for native seeds.
- Native seed biology, genetics and germination — improving our understanding of and developing good practice approaches for germinating challenging species (i.e. seed enhancement technology). This will also improve our understanding of the technologies and methods needed for seed production, storage and use and monitoring and maintenance over time.
- Unknown taxa and flora — exploring and documenting unknown taxa and flora.
- Building scale — growing the capacity of the sector to respond to large scale events and to contribute to areas such as domestic food supply, including the:
  - native ornamentals/garden/landscapes
  - native foods/bush foods industry.

5 RECOMMENDATIONS

5.1 Key findings

The workshops highlight the need to reduce silos and competition and to better fund and coordinate across the sector. This should be coordinated at federal and state government levels. R&D should aim to better match resource and skill availability, and leverage private businesses and Traditional Owner priorities and knowledge to conduct/support R&D.

Grant funding and commercial income streams should incentivise collaboration and focus on longer-term projects that will deliver longer-term outcomes.

Two of the four case studies are highly applicable to the native seed sector. The findings for these are listed below:

Case Study 1 — Linkage Projects

- Linkage Projects is an established model, which participants in the native seed sector could apply for.
- Primary applicants (eligible universities) are required to engage with cross-sector participants.
- Matched funding requirements would secure additional funding for the sector (with exemptions for non-profits and small businesses).

Case Study 2 — Rural R&D Corporations

- RDCs are a successful and established R&D system with existing collaborative relationships in the agricultural, regional and environmental spaces (complementary to the native seed sector).
- AgriFutures Australia (one of the 15 RDCs) has an Emerging Industries Program which is designed to develop industries through R&D and capacity building.

A Draft Framework for applied R&D has been developed using the lessons learnt from the desktop research of applied R&D funding models and findings from the Strategy design consultations (see Section 4).

The proposed Draft Framework is an innovative and good practice model for use in the native seed sector. It will be outcome-driven, facilitate cross-sectoral collaboration and knowledge sharing, be overseen by a national cross-sectoral advisory body and leverage a broad range of opportunities to secure funding from existing models.

Implementation of the Draft Framework requires sufficient resourcing to support longer-term collaboration and outcomes-driven applied R&D.

Continual monitoring of progress of the Draft Framework will allow for its adaptive management. This will ensure that the Draft Framework can best meet the sector's needs for applied R&D as it scales and matures.

5.2 Recommendations

Key recommendations from this review are as follows:

1. **A national advisory body should be established to develop and implement the Draft Framework for applied R&D. The advisory body should include participants from across the native seed sector.**

2. **The Draft Framework should be outcomes-driven. The advisory body should identify outcomes and applied R&D priorities, following consultation with the sector and a review of existing literature and research gaps and priorities. The intended outcomes should guide the work programs/activities to be conducted and the partnerships that need to be formed.**

3. **An online platform should be established and annual fora held, to share knowledge, track progress and facilitate collaboration.**

4. **Native seeds organisations should leverage opportunities to secure funding from existing applied R&D funding models.**

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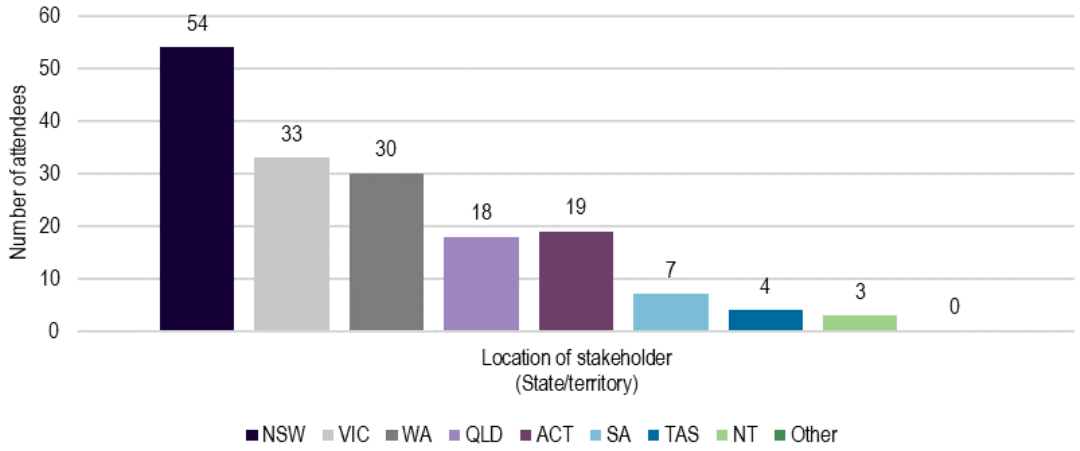
APPENDIX B — LIST OF STAKEHOLDERS CONSULTED

In April and May, 2021 a series of 14 Strategy design workshops were conducted as part of the design of the Strategy. R&D was discussed as a part of each of these workshops and there was one workshop that focused on R&D more specifically. A total of 168 unique stakeholders attended the workshops. The distribution of stakeholder location is provided below.

FIGURE B.1. LOCATION OF STAKEHOLDERS CONSULTED ON R&D DURING THE STRATEGY DESIGN WORKSHOPS



Source: ACIL Allen

The stakeholders were asked to self-identify their organisation. In total 114 organisations were represented. This includes multiple branches of government departments. These organisations are listed below in alphabetical order:

1. ACT Government, Environment, Planning and Sustainable Development Directorate
2. ACT Government, Parks and Conservation Service
3. Adelaide Botanic Gardens
4. Alcoa
5. Apace Aid Inc
6. AquaFirma
7. Arid Landscapes
8. AustraHort
9. Australian Association of Bush Regenerators
10. Australian Institute for Botanical Sciences
11. Australian Network for Plant Conservation
12. Australian Seed Bank Partnership

13. Australian Seed Federation
14. Australian Wildlife Conservancy
15. Best Nursery
16. BioBank Seed
17. Botanic Gardens and Parks Authority
18. Brisbane City Council
19. Bush Heritage
20. Cape Life
21. Cardinia Environment Coalition
22. City of Cockburn
23. City of Salisbury
24. Commonwealth Department of Agriculture, Water and the Environment
25. Commonwealth Department of Environment and Natural Resources
26. Commonwealth Scientific and Industrial Research Organisation
27. Conservation property manager
28. Conservation Volunteers Australia
29. Corangamite Catchment Management Authority
30. Corporate Carbon Advisory
31. Currockbilly Mountain Nursery
32. Dana Kelly Consulting
33. Ecology and Heritage Partners
34. EConPlan
35. Ecotypic Pty Ltd
36. Environment and Planning Directorate
37. Envirotech
38. Euroa Arboretum
39. Field's Environmental Solutions
40. Fitzroy Basin Association
41. Foundation for National Parks and Wildlife
42. Future Harvest Native Revegetation Services
43. GHEMS Revegetation environmental
44. Glenelg Hopkins Catchment Management Authority
45. Goulburn Broken Catchment Management Authority
46. Green Blue Health
47. Greening Australia Limited
48. Harvest Seeds & Native Plants

49. Kalbar Operations
50. Katanning Landcare
51. Ken Davies Seed
52. Kings Park
53. Landcare
54. Landcare Illawarra
55. Local Council
56. Local Land Services
57. Main Roads WA
58. Mallee Conservation
59. Mt Willoughby
60. Murray Local Land Services
61. Murrumbateman Landcare Group
62. Native Seeds Pty Ltd
63. Native Soda
64. NaturalCapital Pty Ltd
65. Nindethana Seed Service
66. Ningee Bush Foods
67. NSW Biodiversity Conservation Trust
68. NSW Department of Planning, Industry and Environment
69. NSW Department of Primary Industries
70. NSW National Parks and Wildlife Service
71. Oil Advantage
72. Penrith City
73. Pilbara Native Seeds Co Pty Ltd
74. Plantrite
75. Queensland Department of Aboriginal and Torres Strait Islander Partnerships
76. Queensland Trust for Nature
77. Rainforest Bounty
78. Regional Development Australia ACT
79. Rewyld Farm
80. Riverina Revegetation formerly Coleambally Saltbush
81. Royal Botanic Gardens and Domain Trust
82. Royal Botanic Gardens Victoria
83. Rural and Remote Development
84. Seed Shed

85. Seeding Victoria
86. Seedtree Maps
87. Seedworld Australia
88. South Coast Native Seeds
89. Stanwell
90. Stringybark Ecological
91. Sustainable Timber Tasmania
92. Swainsona Seed Services
93. Tasmanian Department of Primary Industries, Parks, Water and Environment
94. Terralogica Seeds
95. The Backyard Garden Enthusiast
96. The Revegetation Industry Association of WA
97. Threatened Species Conservancy
98. Top End Seeds
99. Transport for New South Whales
100. Trillion Trees
101. University of Queensland
102. University of Sydney
103. University of Tasmania
104. University of Western Australia
105. Upper Murrumbidgee Landcare
106. Verterra
107. Victoria Volcanic Plain Biosphere
108. Victorian Department of Environment, Land, Water and Planning
109. Vitroflora
110. WA Department of Primary Industries and Regional Development
111. Wagga Wagga City Council
112. Western Australian Biodiversity Science Institute
113. Wheatbelt Natural Resource Management Inc
114. Yass Area Network of Landcare Groups