PROJECT PHOENIX

A STRATEGY FOR THE AUSTRALIAN NATIVE SEED SECTOR

NOVEMBER 2021

First published 2021
Project Phoenix
Greening Australia (National Office)
Level 3, 349 Collins Street
Melbourne VIC 3000
Tel: 1300 886 589
Email: phoenix@greeningaustralia.org.au
Website: www.greeningaustralia.org.au

ISBN: xxx-x-xxxxxx-xx-x (Book)
xxx-x-xxxxxx-xx-x (epub)

Authors: Jan Paul Van Moort, Executive Director, ACIL Allen
Dr Alexandra Lobb, ACIL Allen
Dr Laura Baker, ACIL Allen
Title: A Strategy for the Australian Native Seed Sector
Notes: Includes bibliographical references

Copyright © Project Phoenix 2021
Cover by Kerry O'Flaherty, Design Consultant
Internal design by Puddingburn Publishing Services
Proofread by Puddingburn Publishing Services

This report is copyright. Except for private study, research, criticism or reviews, as permitted under the *Copyright Act 1968* (Cth), no part of this report may be reproduced, stored in a retrieval system or transmitted in any form or by any means without prior written permission. Enquiries should be made to phoenix@greeningaustralia.org.au.

Project Phoenix is supported by the Australian Government's *Wildlife and Habitat Bushfire Recovery program* and co-ordinated by Greening Australia.

Australian Government

Greening Australia

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.

ACKNOWLEDGEMENTS

The ACIL Allen team would like to acknowledge the generous contribution of participants from across the native seed sector in developing this *Strategy*.

Greening Australia would like to acknowledge the hard work and dedication of the Project Phoenix Management Team: Samantha Craigie, Patricia Verden, Brian Ramsay, Irene Walker, Courtney Sullivan, Rowan Wood, Paul Della Libera, Kim Philliponi and Ella Campen.

CONTENTS

EXECUTIVE SUMMARY

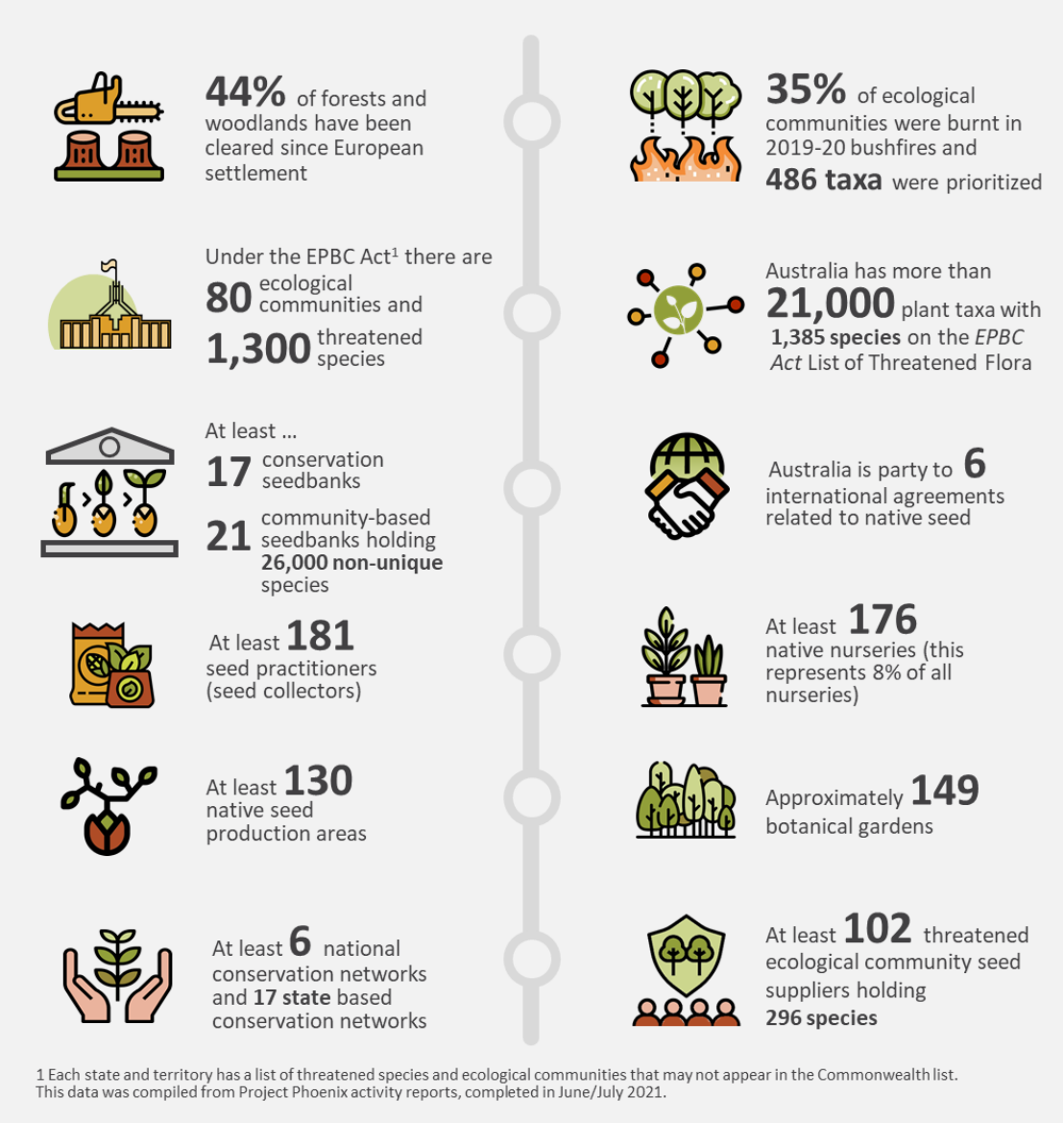
Why we need a strategy

Australia has great biodiversity with over 21,000 different species of native plants. Some of these are commonly sourced and are available. Others are protected by legislation (e.g. threatened species) and occur in or make up endangered ecological communities. Native seed has many uses which are often inter-related and continually evolving. Native seed is used to conserve and restore our landscapes. It creates opportunities for communities (e.g. Traditional Owners and conservation/Landcare), businesses (e.g. seed collectors, restoration practitioners and rehabilitation practitioners (e.g. mining, roads and infrastructure) as well as being utilised for native foods, gardens and novel products. A snapshot of the native seed sector is presented in **Figure ES1**.

In 2019–20, Australia suffered unprecedented bushfires. Over 35 per cent of Australia's ecological communities were impacted. After the 'Black Summer' bushfires, it was clear that we needed to build a sustainable supply of native seed to be prepared for disasters such as fire, flood, drought and climate change. This reinforced the existing need for native seed to rehabilitate damaged land (e.g. from clearing, mining, roads and infrastructure).

This ten-year native seed and landscape restoration *Strategy* is a coordinated approach to growing the sector. It aims to remove barriers and achieve outcomes that will benefit the whole sector and enable Australia to better manage the restoration and rehabilitation of landscapes and support biodiversity.

FIGURE ES1. A SNAPSHOT OF THE NATIVE SEED SECTOR



Source: Project Phoenix

The outcomes will benefit everyone

This *Strategy* has been designed around two core objectives for Australia in the use of native seed.

The full diversity of Australian native plant species and their genetics need to be available for future generations and active use.

As the world changes, Australia needs to ensure that we preserve our native plant species and prevent them from becoming lost forever. This means maintaining species in the wild and ensuring that soil seed banks and ex situ seed banks provide insurance for our species. This will require improvement, growth and maintenance of existing seed banks and seed production networks to ensure genetically diverse and viable seeds are available for future generations.

The Australian native seed sector needs to attract, retain and grow the resources to sustain its skills and capacity to respond when required.

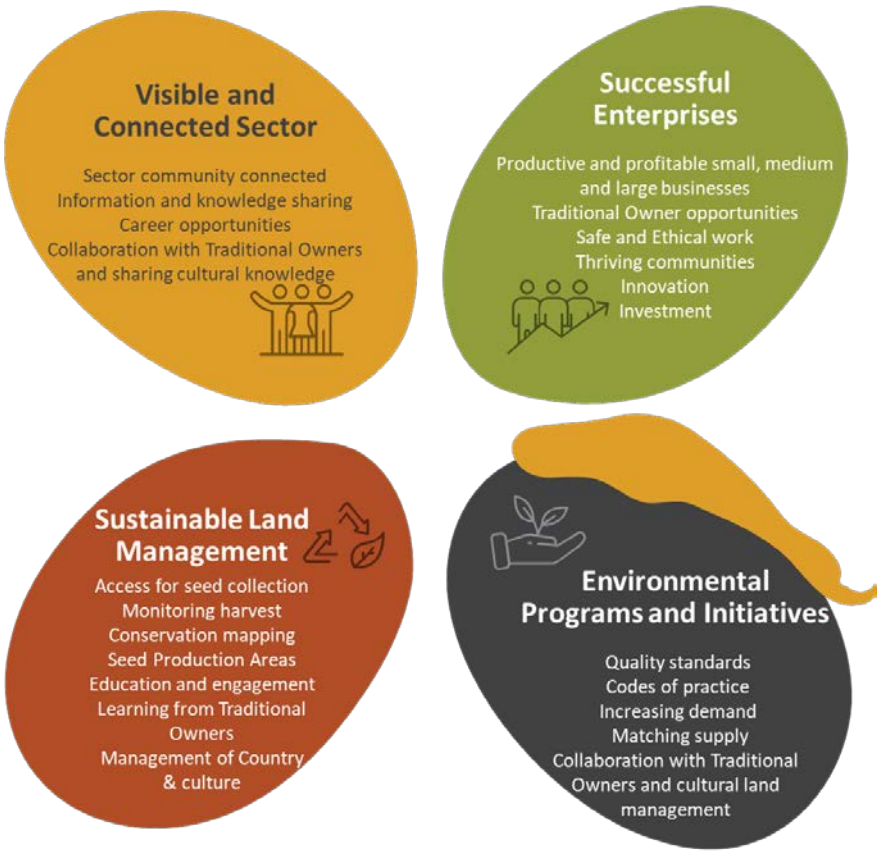
The need for native seed is always changing and is increasingly unpredictable. As such, we need to be able to scale seed sources, seed banks and uses as needed. This requires a flexible market, infrastructure, organisations and skills.

The native seed sector is complex, diverse and ever-changing. While these differences can create resilience, it makes it difficult to achieve common goals or overcome common challenges.

The *Strategy* relies on the whole sector to overcome these challenges. This will deliver benefits for all participants (refer **Figure ES2**), by creating a sector that:

- is visible and connected
- has successful enterprises and supports thriving communities
- is supported by programs and initiatives and
- provides a sustainable supply of native seed.

FIGURE ES2. BENEFITS



Source: Greening Australia and ACIL Allen

The *Strategy* acknowledges that native seed is important to Traditional Owners and a key element of implementing the *Strategy* will be working with Traditional Owners to build a culturally appropriate and inclusive sector. The *Strategy* has incorporated the key findings and recommendations from extensive engagement conducted with Traditional Owners as part of the report, *Indigenous Communities — Opportunities for native seed training*. This aims to build alignment between the *Strategy* and the needs of Traditional Owners.
Traditional Owners have cultural responsibilities to manage Country, maintain cultural practices, teach young generations, implement Aboriginal lore and use natural resources sustainably.

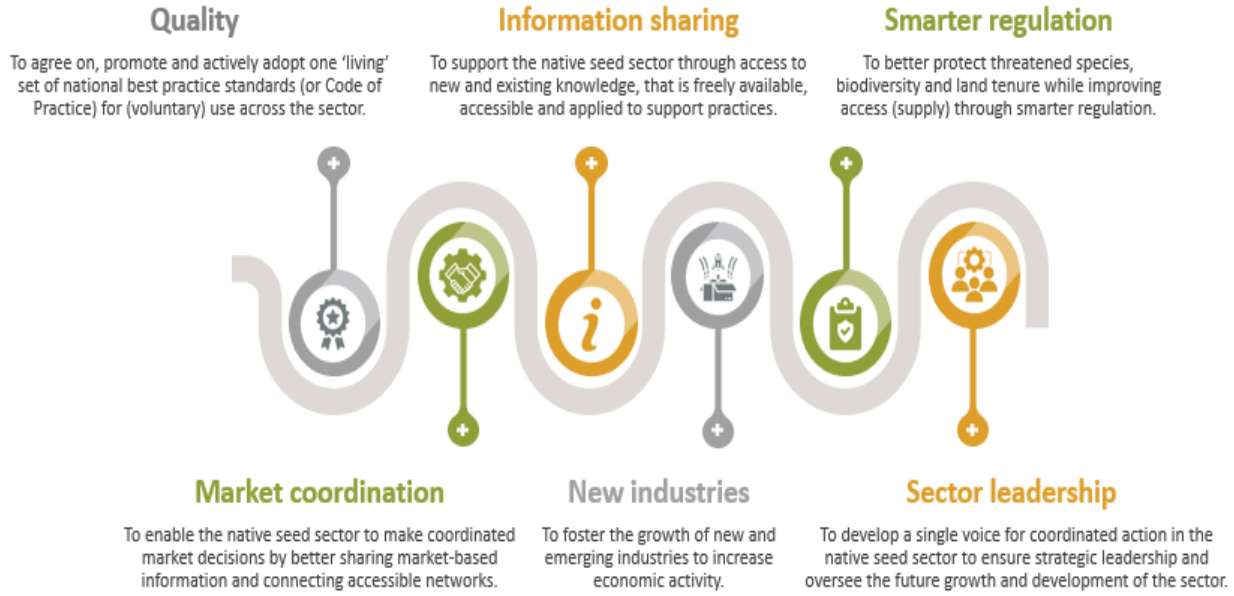
More work is needed to ensure the *Strategy* is implemented together with Traditional Owners in a manner that is culturally appropriate, culturally safe and inclusive, and meets the needs of Traditional Owners. This should focus on learning from Traditional Owners, developing strong partnerships with them, strengthening Traditional Owner networks and building an understanding of Country as well as connection to Country and culture across the Native Seed Sector and the broader Australian community.[1]

[1] E Woodward, R Hill, P Harkness, and R Archer (eds) (2020). *Our Knowledge Our Way in caring for Country: Indigenous-led approaches to strengthening and sharing our knowledge for land and sea management. Best Practice Guidelines from Australian experiences*. NAILSMA and CSIRO.

Six Strategic Objectives

The *Strategy* sets six Strategic Objectives (refer **Figure ES3**) to deliver on the aims and achieve the benefits outlined above.

FIGURE ES3: STRATEGIC OBJECTIVES



Source: ACIL Allen

The Strategic Objectives will support everyone by overcoming common challenges such as:

- insufficient information (including market-based information)
- competing views
- difficult regulation and
- uneven and unpredictable demand and supply.

The objectives are summarised below together with 16 activities that show how the fulfilment of the objectives will be achieved.

Strategic Objective 1: Quality

High quality seed collection and storage are common among sector participants and this quality needs to be better recognised and valued. In contrast, poor quality seed collection and storage practices occur among some sector participants, which damages the reputation of the sector as a whole.

We need to agree on and use a national set of standards for collecting, cleaning and storing seed. This will ensure that users of seed get value for money and suppliers of seed get guidance to improve practice, enabling them to provide assurance to the market and receive recognition for high quality outputs.

The goal for this Strategic Objective is:

To agree on, promote and actively adopt one 'living' set of national best practice standards (or code of practice) and functional data systems for (possibly voluntary) use across the sector.

The 'living' standard needs to be flexible to adapt as the sector grows and new research emerges. This will take time to be developed and adopted, and its use should initially be voluntary.

The actions for this Strategic Objective are:

1. Adapt and adopt an existing framework(s) for standards that are nationally agreed upon but voluntary.
2. Locate an 'owner' for the standards so that they can be maintained, adapted and developed over time using existing systems and processes.
3. Promote the benefits of using standards to larger seed suppliers, purchasers and users.

Strategic Objective 2: Market coordination

Despite the many uses for native seed, there is uncertainty around what, where and when different types of seeds will be needed, where these can be sourced from, in what quantity and quality, and at what price. This makes it difficult for businesses to invest in physical assets, research and development (R&D), quality processes, systems or staff.

The goal for this Strategic Objective is:

To enable the native seed sector to improve coordinated market decisions by better sharing market-based information and connecting organisations and networks.

The sector needs information on priority areas and policies to secure funding, as well as information on the demand for native seed to make strategic decisions on seed production areas, seed banks and storage requirements and on investing in skills and capabilities.

The actions for this Strategic Objective are:

4. Develop a schedule of regionally-based events (through regional natural resource management (NRM)/Landscape Regions, Landcare or industry groupings) to facilitate information sharing and networking accompanied by a widely-circulated regular summary of trends and opportunities.
5. Develop a 'policy and planning' summary integrated with spatial mapping and other existing databases and tools to inform the sector on possible requirements for seed (quantity, location and timing).
6. Design a regionally-networked exchange portal with a brokerage function to support sharing of demand and supply-side information.
7. Identify and engage potential users of native seed to build a broader demand base.

Strategic Objective 3: Information sharing

The sector has challenges in creating and using new and existing information such as best practice techniques and approaches. This limits the growth of the sector and decision-making by businesses, institutions and policy makers. Better coordination and access to information is essential for the growth of the sector, reducing duplication of effort and maximising opportunities.

Existing information on regional native species and guides on their distribution should be made more available for all regional NRM/Landscape Regions. New R&D could focus on:

- biodiscovery (new uses for native seed)
- seed biology
- genetics
- germination
- unknown taxa and flora and
- building the scale and capacity of the sector.

Knowledge and information sharing needs to consider the important role of Traditional Owners in the native seed sector, ensuring that Traditional Owners are appropriately engaged and remunerated so that the benefits of traditional knowledge flow back to communities.

The goal for this Strategic Objective is:

To support the native seed sector through access to new and existing knowledge that is readily available, accessible and practical.

The sector can use a range of existing funding sources to create and use information.

The actions for this Strategic Objective are:

8. Develop a single connected network of information databases on areas relevant to native seed from the regional to the national level (this can be integrated with information developed in Strategic Objective 2).
9. Make use of existing structures and funding and co-design R&D priorities with a focus on public good to improve R&D support/outcomes.
10. Work with existing and potential providers of native seed education and training to strengthen the range and quality of education and training provided.
11. Work with Traditional Owners to co-design the adoption and extension of existing protocols for engaging in services with Traditional Owners.

Strategic Objective 4: New industries

New industries will boost the value of the sector and can help to build resilience to a changing climate. The two main areas for developing industries are:

- **Small, specialist areas**: industries with a low number of seed species and higher value, for example, native foods/bushfoods, ornamentals/cut flowers, biodiscovery and medicines etc.
- **Big-scale products**: industries with a large scale of land and species, for example, carbon or biodiversity offsets, native grasses and seeds as feedstocks.

New industries are more likely to grow and invest in innovation if there is a supportive, thriving community. This also lowers the risks of innovation. New industries should use a range of existing support programs to grow. Emerging industries should also consider how to recruit new participants.

The goal for this Strategic Objective is:

To foster the growth of new and emerging industries to increase economic activity.

The actions for this Strategic Objective are:

12. Ensure those who wish to develop new industries are aware of available funding and supports to do so.
13. Coordinate and collaborate better through events (Strategic Objective 2) and information (Strategic Objective 3).

Strategic Objective 5: Smarter regulation

The regulatory system governing the native seed sector is complex. It is controlled by federal, state and territory and local governments. Regulation is needed to protect the environment, heritage and biodiversity conservation. However, differences in regulation across Australian jurisdictions and the complexity within state and territory processes mean that licensing systems are varied and application processes are difficult, lengthy and expensive.

The goal for this Strategic Objective is:

To better protect threatened species, biodiversity and land tenure while improving access (supply) through smarter regulation.

State and territory legislation and regulation needs to be reviewed, amended and harmonised to better protect native plant species, control land access/property rights, protect traditional knowledge/intellectual property, support the development of the sector and make it easier to do business.

The actions for this Strategic Objective are:

14. Harmonise and simplify permits/licensing through review and reform of state/territory legislation across all jurisdictions.

Strategic Objective 6: Sector leadership

While many groups could lead the sector, each is focused on a specific area within the sector and no single group is positioned to provide overall leadership. This long-standing issue prevents the sector from implementing the *Strategy* and growing and developing as a result.

Leadership, and possibly a 'peak body', could:

- implement the *Strategy*
- represent the sector in policy processes
- promote the use of seeds and better practices
- set quality standards and provide accreditation
- facilitate networks and information sharing and
- offer education and training.

The goal for this Strategic Objective is:

To develop a single voice for coordinated action for the native seed sector to ensure strategic leadership and foster its future growth and development.

For leadership to occur, there will need to be:

- an alignment of interests between the businesses, associations and others to establish a clear identity and agenda
- a value proposition for the services to be unique to, or best delivered at a sector level
- financial viability among those that are willing and able to provide the resources needed to lead or support the 'peak body'.

The actions for this Strategic Objective are:

15. Establish transitional leadership in the form of a partnership arrangement with representation from across the native seed sector focused on *Strategy* implementation.
16. Establish a peak body for businesses, organisations and individuals who provide and/or use native seed.

Implementing the *Strategy*

Project Phoenix has created the platform to develop the native seed sector. The individual Phoenix projects have consolidated key information and provide insights to be acted on. Individuals and organisations across the sector have been actively involved in communicating and developing the *Strategy*. This has strengthened relationships, built understanding and support as well as developed the *Strategy* itself.

Realising the *Strategy* involves building momentum around implementing priority activities. Momentum needs to be built in three areas:

- engaging and providing practical advice for practitioners on the ground
- building platforms for future gains and
- strategic leadership.

TABLE ES1. ACTIVITIES BY STRATEGIC GOAL AND IMPLEMENTATION FOCUS

ACTIVITIES	PRACTICAL ADVICE	BUILDING PLATFORMS	*STRATEGY* LEADERSHIP
OBJECTIVE 1: QUALITY			
1. Adapt and adopt an existing framework(s) for standards that are nationally agreed but voluntary.	■		
2. Locate an 'owner' for the standards so they can be maintained, adapted and developed over time using existing systems and processes.		■	
3. Promote the benefits of using standards to larger seed suppliers, purchasers and users.	■		
OBJECTIVE 2: MARKET COORDINATION			
4. Develop a schedule of regionally-based events (through the NRMs/Landscape regions, Landcare or industry groupings) to facilitate information sharing and networking accompanied by a widely-circulated regular summary of trends and opportunities.	■		
5. Develop a 'policy and planning' summary integrated with spatial mapping and other existing databases and tools to inform the sector on the possible requirements for seed (quantity, location and timing).	■		
6. Design a regionally networked exchange portal with a brokerage function to support sharing of demand and supply-side information.		■	
7. Identify and engage potential users of native seed to build a broader demand base.	■		
OBJECTIVE 3: INFORMATION SHARING			
8. Develop a single connected network of information databases on areas relevant to native seed from the regional to the national level (integrate this with information developed in Strategic Objective 2).		■	
9. Make use of existing structures and funding co-design R&D priorities with a focus on public good to improve R&D support/outcomes.		■	
10. Work with providers and potential providers of native seed education and training to strengthen the range and quality of education and training provided.		■	
11. Work with Traditional Owners to co-design the adoption and extension of existing protocols for engaging in services with Traditional Owners.	■		
OBJECTIVE 4: NEW INDUSTRIES			
12. Ensure those who want to develop new industries are aware of available funding and supports to do so.	■		
13. Coordinate and collaborate better through events (Strategic Objective 2) and information (Strategic Objective 3).	■		
OBJECTIVE 5: SMARTER REGULATION			
14. Harmonise and simplify permits/licensing through review of state/territory legislation across all jurisdictions.		■	
OBJECTIVE 6: SECTOR LEADERSHIP			
15. Establish transitional leadership in the form of partnership arrangement with representation from across the native seed sector focused on *Strategy* implementation.			■
16. Establish a peak body for businesses, organisations and individuals who provide and/or use native seed.		■	

Priority 1: Practical advice and engagement for practitioners

A consistent theme from practitioners is the immediate need for practical advice they can use to improve their circumstances and operations. The considerable amount of information consolidated through Project Phoenix provides the basis for this advice and can be readily promoted and applied. Focusing on providing advice will improve practices that underpin development and actively engage the sector in *Strategy* implementation. This needs to extend beyond electronic dissemination to actively engaging practitioners.

The process should start by organising a series of regionally-based events (Activity 4). This will sustain the engagement created so far and be used to initiate other activities such as:

- Promoting the benefits of use of the standard(s) (Activity 3)
- Developing the policy and planning summary (Activity 5)
- Identifying and engaging potential users to build a broader demand base (Activity 7)
- Promoting educational resources and training (Activity 10)
- Contributing to co-design of protocols for engaging in services with Traditional Owners (Activity 11)
- Co-promoting new industry funding and support opportunities (Activities 12 and 13).

The events should be organised and have commenced by the end of 2021.

Priority 2: Building platforms for future gains

The remaining activities are equally important and need to start. However, they will take time to fully realise due to the collaboration and/or resources required.

Establishing a 'peak body' for businesses, organisations and individuals who provide and/or use native seeds (Activity 16) is critical to developing a voice for the sector. This will take support and time for the various parties to develop, discuss and agree on an option that is appropriate and sustainable.

Improving permits/licences (Activity 14) involves each jurisdiction completing reviews, and agreeing on harmonisation where appropriate. There are multiple systems and competing objectives and differing perspectives that need to be considered. In the first instance, agreement and commitment to start is required.

Similarly, an exchange portal/networked brokerage (Activity 6), networked databases, and integrated R&D all require collaboration, design and resources to activate.

National agreement on which existing standard(s) are to be agreed (Activity 1) and future governance of their maintenance (Activity 2) needs to be progressed, but should not limit other activities.

Priority 3: Strategy *leadership*

Project Phoenix has been successful in bringing the various interests together to develop this *Strategy* to underpin the native seed sector's development. Leadership is now required to oversee implementation. This role is beyond any one organisation; it requires collaboration and contribution from across the sector.

A transition is required to form a joint industry–government coalition to lead the *Strategy*. An immediate action is to convene a *Strategy* implementation meeting with representative and interested parties from across the sector to:

- meet with the Project Phoenix team and External Steering Committee to transfer information
- establish a transitional working group to oversee *Strategy* implementation with representation from across the sector (including conservation, restoration, commercial, non-profit, mining, infrastructure, agriculture, forestry, Traditional Owners, etc.)
- agree on who will lead and contribute to implementing Priority 1 activities.

The meeting should be convened by Project Phoenix and the Commonwealth Department of Agriculture Water and Environment around the time the *Strategy* is published in September 2021.

CHALLENGES AND STRATEGIC OBJECTIVES

Background and purpose

Project Phoenix arose from the 2019–20 bushfires and longstanding recognition that we can and must do better with our native seed. It is a $5 million project, involving experts and representatives from across the native seed sector, in 30 activities (Project Phoenix activities, see Appendix A) that are delivering against eight strategic priorities. Project Phoenix is funded by the Federal Government's $50 million Bushfire Wildlife and Habitat Recovery package.

Developing and coordinating a ten-year native seed and landscape restoration *Strategy*, including engagement with key stakeholders.

Project Phoenix has presented the opportunity for developing, coordinating and implementing a ten-year native seed and landscape *Strategy*, including engaging with key stakeholders. The *Strategy* aims to create a ten-year strategic road map to start building the systems that will enable the sector to improve the physical repositories of native seed (e.g. seed banks or soil seed banks). This will enable Australia to better manage restoration and rehabilitation of landscapes, support biodiversity and recover from bushfires, drought and other catastrophes.

This *Strategy* has been developed through research and broad engagement with the sector from January to August 2021 (see Appendix B, Appendix C and Appendix D). This has been overseen by an External Steering Committee (ESC) with a diverse membership, including government and research agencies, land managers, the national nursery association and restoration practitioners. The role of the ESC has been to provide advice and validate the *Strategy*.

Strategy development has been informed by broad-ranging interviews with the ESC and sector participants to scope the *Strategy*, identifying key themes and additional members of the sector to be consulted. This was followed by 14 design workshops focused on the *Strategy's* objectives and state, territory and national perspectives.[2] A draft of the *Strategy* was prepared for consideration by the ESC, Greening Australia and the Commonwealth Government prior to public consultation from July–August 2021. The public consultation process attracted significant engagement and feedback from across the sector, including 77 submissions by stakeholders from most states and territories and from a broad range of participants (including practitioners, national organisations and associations and communities).

[2] Greening Australia (2021) Project Phoenix Development Workshop Recordings. Accessed 1 June 2021: https://www.greeningaustralia.org.au/project-phoenix-development-workshop-recordings/.

The *Strategy* acknowledges that native seed is important to Traditional Owners and a key element of implementing the delivery of the *Strategy* will be working with Traditional Owners to build a culturally appropriate and inclusive sector. The *Strategy* has incorporated the key findings and recommendations from extensive engagement conducted with Traditional Owners as part of the report, *Indigenous Communities — Opportunities for native seed training*.

This aims to build alignment between the *Strategy* and the needs of Traditional Owners. More work is needed to ensure the *Strategy* meets the needs of Traditional Owners and is implemented together with Traditional Owners. This should focus on learning from Traditional Owners, developing strong partnerships with them and strengthening Traditional Owner networks.[3]

Sector overview and drivers

Someone is always working with native seed somewhere.

Native seed has many uses which are often inter-related and continually evolving. This creates a dynamic and complex sector (**Figure 1**). Native seed is used extensively in landscape restoration, especially when in situ seed banks have been degraded and native seed needs to be reintroduced. Biodiversity conservation provides an enduring core of the sector, including a well-developed research network and an increasing focus on the value of Traditional Owners' knowledge and culture. Primary industries are a long-standing part of the sector through horticulture, forestry and increasingly vegetation offsets.

[3] Woodward, Hill, Harkness and Archer (eds) (2020). Op cit.

FIGURE 1. THE NATIVE SEED SECTOR USES

LANDSCAPE RESTORATION

Ecological restoration – the process of assisting the recovery of an ecosystem that has been degraded, damaged or destroyed

Rehabilitation – the process of reinstating ecosystem functionality on degraded sites where ecological restoration is not the aspiration of enabling on-going ecosystem services. e.g. carbon sequestration offsets

Revegetation – establishing native or non-native plants on sites using any means

Offsets
(biodiversity and carbon sequestration)

BIODIVERSITY CONSERVATION

Preservation and protection of species and ecosystems with the prioritisation of threatened species and endangered ecological communities

Understanding of biodiversity

Sharing and learning from Traditional Owner knowledge and culture

Offsets
(biodiversity sequestration)

PRIMARY INDUSTRIES

Horticulture, including nurseries, parks and gardens

Native forestry

Offsets
(biodiversity and carbon sequestration)

Source: ACIL Allen

The native seed value chain applies to all sub-sectors that are often interlinked (see **Figure 2**).[4] Native seed needs to be sourced, relying on an extensive network of mostly small business collectors. Native seed collected for conservation purposes is mostly funded by government and non-profit organisations. These are stored in seed banks and produced in seed production areas for posterity (conservation) or to provide native seed for seeding and propagation. Seed banks mostly operate independently, in line with the needs of the region or supplying businesses.

The users of native seed are a mixture of private landholders (including rural, industrial and urban), infrastructure agencies and public land managers (including local, state and federal governments).

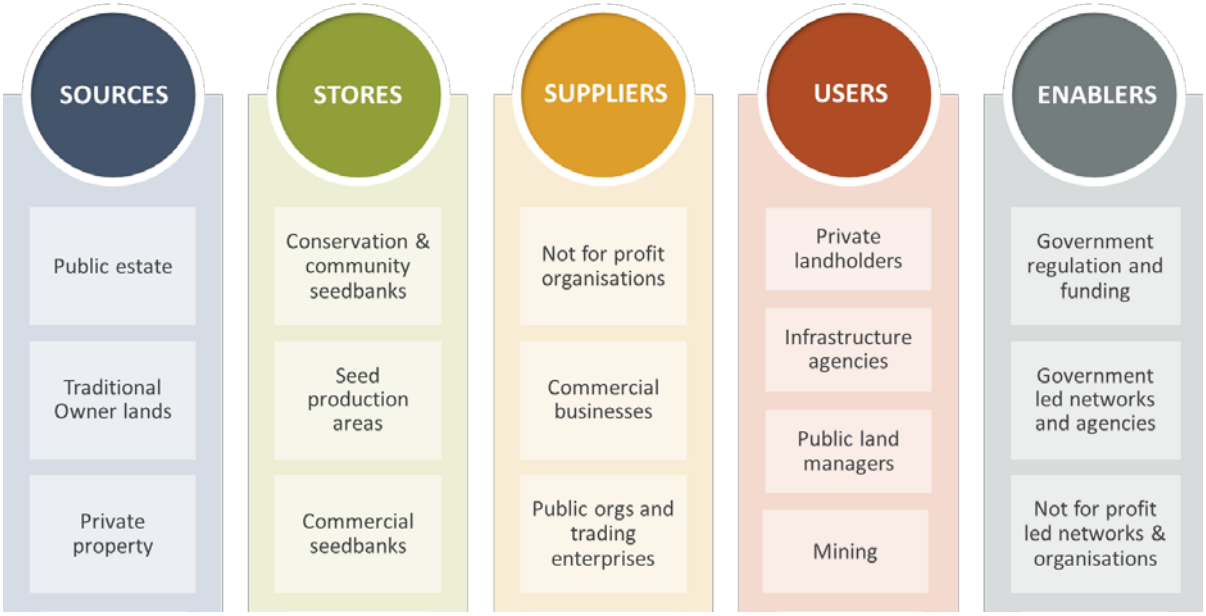
Users have an array of supply arrangements including maintaining their own capability, directly engaging native seed suppliers on repeat or spot-contracts or outsourcing to third parties. Government plays an important role in enabling the value chain through regulation, funding of direct seed collection and driving demand as well as the direct activities and network facilitation of various agencies. Non-profit and private entities are also important enablers, as they seek to promote and directly invest in increased native vegetation for conservation and offsetting purposes.

[4] Society for Ecological Restoration Australasia (SERA) (2021). *National standards for the practice of ecological restoration in Australia*. Edition 2.2. Available from: www.seraustralasia.com.

Traditional Owners contribute to the entire native seed supply chain by collecting seed and providing access to Country, storing and supplying seed, and using seed in restoration and rehabilitation efforts. Traditional Owners are also key enablers of the native seed sector as holders of a wealth of native seed knowledge.

Partnerships with Traditional Owners are central to caring for Country. This needs to be supported by strengthening the sharing and weaving of Traditional Owners' knowledge and building strong partnerships and Traditional Owner networks.[5] Implementation of the *Strategy* will need to work closely with Traditional Owners, considering how best to protect data sovereignty and their knowledge. The findings from *Indigenous Communities — Opportunities for native seed training* have been incorporated throughout the report, to build the alignment of the *Strategy* with the needs of Traditional Owners.

FIGURE 2. THE NATIVE SEED VALUE CHAIN



Source: ACIL Allen

Overall, the sector is impacted by highly variable demand and constrained supply. A snapshot of the native seed sector is presented in **Figure 3**.

Demand for native seed is growing (though highly variable in time and geography) and is expected to accelerate over the next decade due to:

- sustained focus on conserving threatened plant species and communities
- ongoing requirements to rehabilitate land following development
- restoration of landscapes following acute (e.g. fire) and chronic (e.g. vegetation decline) degradation

[5] Woodward, Hill, Harkness and Archer (eds) (2020). Op cit.

- increased large-scale plantings related to biodiversity and carbon sequestration opportunities
- increased focus on environmental, social and governance factors
- the need to build resilience to a changing climate
- Australian commitments to international conventions such as UN Convention on Biological Diversity[6] and
- commercial opportunities for native seed and land managers, including Traditional Owners.

The demand for native seed needs to focus on quality native seed (and the willingness to pay for quality native seed), to improve the quality of restoration outcomes.

Supply is mostly limited by access to seed and land, as well as variability due to seasonal conditions, incomplete information on demand, and poor coordination and resourcing (e.g. timing, funding, infrastructure, skills and knowledge and lack of seed production beyond wild populations) across the sector. This is limited by climate change, catastrophic disturbance events (e.g. fire and flood) and the fragmentation and deteriorating condition of native vegetation.

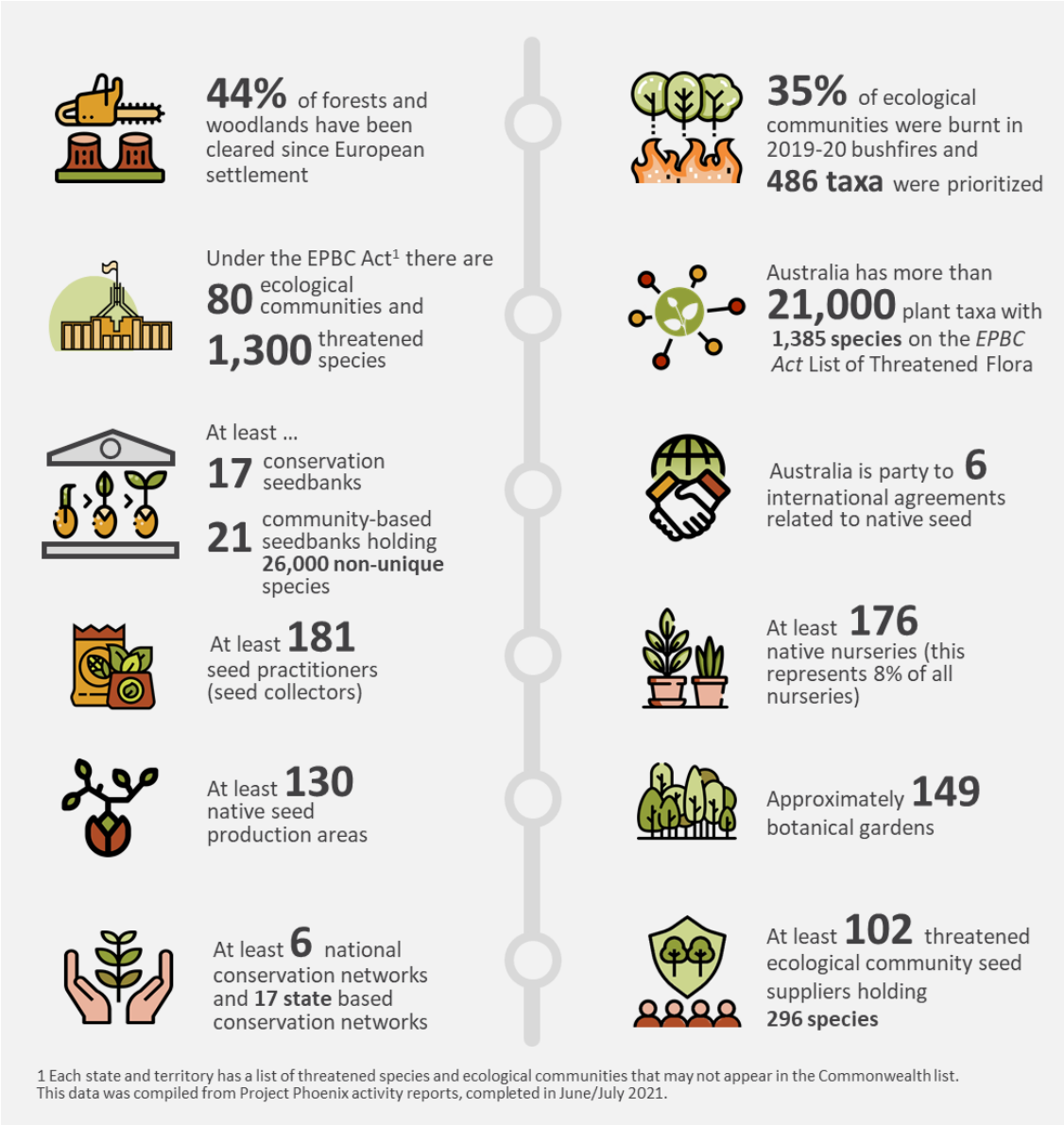
It is difficult for the sector to manage unpredictable supply and demand. This is made more challenging by the diversity of roles, perspectives and priorities of each of the native seed sector participants. However, the barriers to growing and developing the sector are similar across the participants. These common barriers are:

- low availability of information, especially information that can be readily used
- poor coordination of the native seed sector, including resources, activities and goals
- diverse and competing views and
- burdensome and complex regulation.

This *Strategy* has been designed to overcome these common barriers to support all participants and enable the native seed sector to deliver benefits for all Australians.

[6] Australia has been committed to the UN Convention on Biological Diversity (UNCBD) since 1993, it is one of three 'Rio Conventions'. It has three objectives: (1) conservation of biodiversity; (2) sustainable use of its components; and (3) fair and equitable sharing of the benefits arising from the use of genetic resources. The UNCBD provides an important framework for integrating Australia's policies of natural resources, environment and biodiversity management. At the time of writing, the *Strategy* the UNCBD had not agreed on the Post-2020 Global Biodiversity Framework. The Post-2020 Global Biodiversity Framework will guide Australia's actions on biodiversity conservation, including the implementation of the Global Strategy for Plant Conservation and seed-related conservation and restoration actions. Australia has a joint approach across all states and territories as well as local governments and using this structure, a new Strategy for Nature and a digital hub was designed. *Australia's Strategy for Nature 2019–2030*: https://www.australiasnaturehub.gov.au/national-strategy Australia's Nature Hub: https://www.australiasnaturehub.gov.au/

FIGURE 3. A SNAPSHOT OF THE NATIVE SEED SECTOR



Source: Project Phoenix Activities 1.4, 2.2, 2.3, 2.4 and 5.3 completion and final reports.

Challenges

Native seed is the foundation of Australia's biodiversity and is widely used in conserving and restoring our landscapes. Native seed creates opportunities for communities (e.g. Traditional Owners and conservation/Landcare groups), businesses (e.g. seed collectors and restoration practitioners) and rehabilitation practitioners (e.g. mining, roads and infrastructure), as well as being utilised for native foods, gardens and novel products. This *Strategy* outlines two objectives to make better use of native seed to manage landscapes and realise opportunities.

The full diversity of Australian native plant species and their genetics need to be available for posterity and active use.

As the world changes, Australia needs to ensure that we retain our native plant species and prevent them from becoming lost forever. Our challenge is firstly, to maintain species in the wild, and secondly, to ensure that seed banks can provide insurance for species to remain available to supplement and restore ecosystems impacted by short and long-term land use changes, catastrophic events and climate change.

This includes soil seed banks and the full range of seed banks, which serve Australia's ecosystems, including native fauna. This will require improvement, growth and maintenance of the existing national conservation and restoration seed banks and seed production networks to ensure genetically diverse and viable seeds are available in perpetuity.

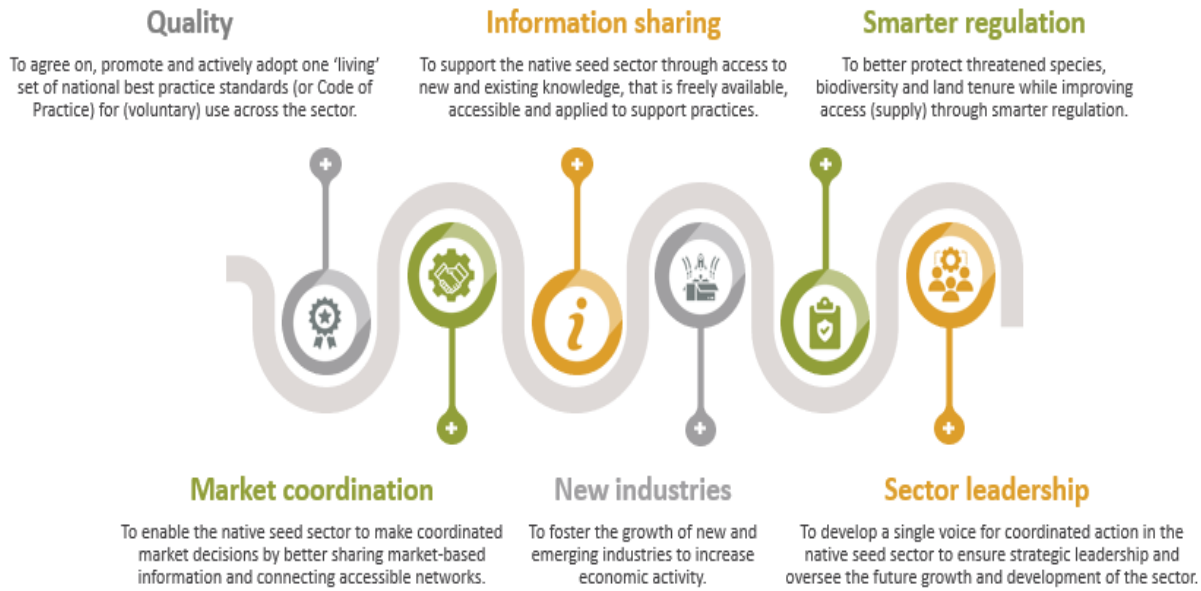
The Australian native seed sector needs to attract, retain and grow the resources to sustain its skills and capacity to respond when required.

The need for native seed is always changing. Catastrophic events, climate change, threatened species, restoration requirements (e.g. for mining, infrastructure and roads, as well as policy-driven programs), conservation initiatives and other opportunities all require native seed. The timing and location of these activities is not always predictable. However, we know the location of degraded landscapes and can forecast the probable location of degradation events (such as bushfires) across Australia. Australia requires a platform that can scale the need for native seed as required. This means market and infrastructure systems that are readily able to regionally source, store and use native seed sustainably across the nation along with the organisations and skills to do so. Buyers of seed also need to understand the value of quality seed and be willing to pay for it.

Strategic Objectives

Six Strategic Objectives have been developed to meet the challenges (see **Figure 4**). The rationale, objectives, major activities and key performance indicators for each are presented in the following chapters.

FIGURE 4. STRATEGIC OBJECTIVES



Using the *Strategy*

Implementation of the *Strategy* is discussed in more detail in Next Steps. The major activities outlined under each Strategic Objective are separate parcels of work that can be invested in by individuals or groups of sector participants. These are summarised in Table 2.

STRATEGIC OBJECTIVE 1: QUALITY

Rationale

Quality standards are essential for developing the native seed sector. Standards for the collection, cleaning and storage of native seed exist but are not nationally agreed upon and it is unclear how widely they are adopted.

Buyers or non-paying users of seed, such as researchers or some restoration practitioners, need quality assurance to know that they will receive value for money, and/or value for time invested, in terms of genetic and species diversity, provenance, germination success rates and hygiene and pathogen status. Suppliers of seed need guidance to improve their practices and provide assurance.

Poor seed collection and storage practices are used by some sector participants. This may continue without strong quality standards, documentation and data management systems, minimum qualifications and competencies and adoption/enforcement. These include exploitation of threatened vegetation communities and Traditional Owner-held lands, unethical and illegal collection practices, overharvesting, loss of genetic integrity, inadequate seed storage and sub-optimal planting and management of seed in the field. These events and actions damage the reputation of the sector as a whole and make it challenging for businesses to secure seed sale prices that are commensurate with the value of the seed.

Buyers or non-paying users of seed need to be made aware of the value of quality native seed, to build a willingness to pay a price for quality native seed that is proportional to the cost of collection/production.

Goal

To agree on, promote and actively adopt a 'living' set of national best practice standard(s) (or Code of Practice) and functional data systems for (possibly voluntary) use across the sector.

A 'living' standard(s) needs to be flexible to allow for ongoing adjustment as the native seed sector matures and to incorporate new R&D as it emerges.

National good practice standard(s) will improve the:

- quality, quantity and diversity (species and genetic) of native seed
- documentation of outcomes from native seed: for multiple uses, from collection and production, through to storage and direct seeding
- market signals (i.e. purchase price or fee for service) through the adoption of standards in the way programs and contracts specify the need for native seed and
- protection of native species populations.

The sector will need time for 'living' standard(s) to develop and be adopted, and their use should initially be voluntary. The sector could consider mandating use of the standard(s) as they develop over time. The standard(s) will need to consider the potential time, cost and resources required to comply (including affordable seed testing) and ensure that they do not burden businesses, particularly those that are small, or that the cost of compliance is incorporated into the cost of the seed (and seed purchasers pay a premium for native seed collected in accordance with the standard(s)).

Major activities

The native seed sector has several standards for the collection and storage of seeds but none are 'living' standards or nationally agreed, and it is unclear how widely these are adopted. Governments and users of seeds are increasingly seeking to ensure quality outcomes are achieved from restoration projects. However, contract specifications, compliance checking and enforcement of 'make good' provisions are variable.

The native seed sector could choose a range of frameworks to design and deliver standard(s). The sector should consider the elements that can be adopted in a voluntary manner and can be scaled and adapted over time (e.g. minimum standardised testing requirements, labelling and database management, certification, licensing, monitoring, reporting and compliance, etc.). This should consider the cost effectiveness of each element and the potential burden on businesses.

Further thought should be given to partnering with Traditional Owners to inform the quality standard(s). This should consider intellectual property rights of Traditional Owners, culturally appropriate seed collection practices and support for Traditional Owner-led seed collection on Country. In working with Traditional Owners, all native seed sector participants should uphold the principles of free, prior and informed consent.

To deliver on **QUALITY**, the following activities are needed:

1.a Develop a nationally agreed framework for standard(s).

i. **Option 1:** adopt an existing standard(s) but ensure this can be adapted, as needed, for example:

- *FloraBank Guidelines* (second edition under development, due in 2021)
- *Plant Germplasm Conservation in Australia* (third edition under development, due in 2021), Australian Network for Plant Conservation
- International principles and standards for native seed in ecological restoration (Pedrini and Dixon, 2020)
- Revegetation Industry Association of Western Australia (RIAWA) Seed Standards[7]
- *National standards for the practice of ecological restoration in Australia*, Society for Ecological Restoration Australasia[8]
- *Guidelines for the Translocation of Threatened Plants in Australia*, Australian Network for Plant Conservation[9]
- Australian Seed Federation's *National Code of Practice for Seed Labelling and Marketing*.[10]

ii. **Option 2:** develop a new framework, while making use of existing standard(s), where possible. For example, this could take a pick-and-mix approach from existing standard(s).

1.b Locate an 'owner' for the standard(s), ideally independent and with existing processes and systems, to maintain and further develop the standard(s).

i. **Option 1**: Find an existing independent body with the capacity to promote the use of the standard(s) and adapt the standard(s) over time (e.g. Australian Network for Plant Conservation, Australian Seed Bank Partnership, Australian Seed Federation).

ii. **Option 2**: Establish a new body to take responsibility for the standard(s). This could consider establishing a peak industry body.

[7] Revegetation Industry Association of Western Australia (2021). RIAWA Standards & Accreditation. Accessed 1 June 2021: https://www.riawa.com.au/accreditation.
[8] Society for Ecological Restoration Australasia (2018). *National standards for the practice of ecological restoration in Australia*. SERA.
[9] ANPC (2018). *Guidelines for the Translocation of Threatened Plants in Australia*. Canberra: ANPC.
[10] Australian Seed Federation (2021). *National Code of Practice for Seed Labelling and Marketing*. Accessed 1 June 2021: https://www.asf.asn.au/code-of-practice/.

1.c Promote the benefits of using standard(s) to larger seed suppliers and purchasers (such as governments/mines). This should demonstrate the value of using the standard(s) and licensing conditions in offering or contracting requirements and the potential to improve the quality of native seed purchased, reduce risk and waste and improve revegetation outcomes. Seed standard(s) should be promoted alongside the use of existing restoration standards, such as the Standard for Ecological Restoration (SERA). This will help ensure native seed is not wasted as a result of sub-standard or ineffective restoration practices.

i. **Option 1**: work with governments and large seed purchasers to align contracts with the standard(s).

ii. **Option 2**: develop schedules for governments and large seed purchasers to readily incorporate the standard(s) into their contracts (including government contracts with service providers, e.g. NRM/Landscape Regions).

Key performance indicators

- 1–2 years:
  - 'Living' minimum standard(s), based on a best practice framework(s), is identified and adopted.
  - An owner for the standard(s) is found and national promotion of the standard(s) begins with the sector, government and large seed purchasers.
- 3 years:
  - 75 per cent of large seed purchasers use the standard(s) as part of their contracting arrangements.
  - 50 per cent of seed suppliers have adopted the standard(s).
  - The standard(s) is evaluated, reviewed and adapted in line with findings and new information (in year 3).
- 5–10 years:
  - 100 per cent of large seed purchasers use the standard(s) as part of their contracting arrangements.
  - 75 per cent of seed suppliers have adopted the standard(s).
  - The standard(s) are evaluated, reviewed and adapted in line with findings and new information (in years 6 and 9).
  - Quality of the seeds bought and sold improves due to improved buyer awareness driving quality standard(s).
  - Quality of restoration outcomes increases due to better lesson sharing and improved seed quality.
  - Quality of seed banking and viability in longer-term storage improves due to better knowledge development and information sharing.

STRATEGIC OBJECTIVE 2: MARKET COORDINATION

Rationale

The native seed sector does not actively collect or share information on demand and supply. This has a significant impact on the competitiveness and efficiency of the market. There is poor visibility and access to information on the:

- seed price and seed quality (related to quality standards)
- quantity, location and timing of upcoming demand for seed and
- quantity, quality, location and timing of seed supply.

In addition, the sector would be more coordinated, collaborative and efficient if there was better information on who is buying and selling seed, the sector's capability and resources (e.g. seed banks, seed production areas, seed sorting and testing services, other specialised equipment or facilities, specialised skills and capabilities), who upholds the good practice standards and who holds the capabilities and resources and where they are located.

Current demand for native seed relies predominantly on the rehabilitation requirements associated with mining, land use planning, transport and infrastructure. Conservation is also a significant contributor to demand for native seed, but this is smaller in scale. Both areas of demand are informed and driven by government policies on threatened species, conservation, landscape restoration, biodiversity offsets and natural disaster recovery.

Further, there is a long-standing network of Traditional Owners and community groups that supply and create demand for native seed, and increasing interest in native seed for carbon offsets, native foods, novel products and ornamental uses (see Strategic Objective 4). This needs to be accompanied by stronger co-development with Traditional Owners to ensure that the benefits from native foods are returned to Traditional Owner communities.

Despite the many existing and potential uses for native seed, there is uncertainty around what, where and when different types of seeds will be needed, where these can be sourced from, in what quantity and quality, and at what price. Uncertain demand makes it difficult for businesses to invest in physical assets, R&D, quality processes, systems or workers.

With governments and their agencies as the primary drivers of demand and the primary funders of conservation outcomes, it is important that they have an understanding of the sector, its public good benefits and its market potential (e.g. restoration, forestry, nurseries, and new or complementary industries). Governments and their agencies need information to support policy development and assist with the financial security of the sector over time.

Greater market transparency may also encourage new market entrants, for example farmers who have native seed assets on their property. This could provide an additional source of income for farmers.

Demand and supply are likely to be specific to each region. A market coordinating function would need to provide region-level support and implementation.

While the need, sharing and outcomes of accessible and transparent information are similar across the sector, participants have different priorities. For example:

- Commercial and not-for-profit organisations need information on the demand for native seed to make decisions on seed production areas, seed banks and storage requirements and on investing in workers' skills and capabilities.
- The conservation sector needs information on priority areas and policies to secure new types of funding and, as for commercial and not-for-profit organisations, to make decisions on seed production areas, seed banks and storage requirements and on investing in workers' skills and capabilities. This could include providing services and/or equipment on a cost recovery/commercial basis.
- Government needs reliable information (e.g. on the location of native seed collections, quantities available and collected, and seed viability) to inform licensing and permission decisions and maintain sustainable use of native seed banks.
- The native seed users need similar information to that of the conservation sector. This also includes the need to know where, what, how and who native seed can be purchased from and how they are best used.

Goal

To enable the native seed sector to improve coordinated market decisions by better sharing market-based information and connecting organisations and networks.

- On the **demand** side there needs to be:
  - Utilisation of the comprehensive mapping tool for restoration scenarios for risks such as fire and other landscape-related issues. *Bushfire impacts — A national model for assessing local landscape restoration priorities*[11] provides a framework that can assess the need for native seed based on: the condition of vegetation in a landscape pre- and post-fire; the severity of the fire; the condition of the landscape; and the composition of the community. In addition, high quality fire severity data based on peer-reviewed methods is currently available in NSW[12,13] and Victoria.[14,15] Similar capacity is being developed in Queensland, WA and Tasmania. New, quality mapping should be incorporated and prioritised over time where available.
  - Regularly updated vegetation mapping and modelling to facilitate restoration planning and highlight areas that could be susceptible to a major disturbances (e.g. fire and flood) where precautionary seed collection could be required.
  - A summary of conservation and landscape restoration policy priorities (in the form of a 'policy and planning sector summary') connected to spatial mapping. This will be dynamic, regularly updated and identify the location of upcoming public and private programs across Australia.
  - Resources to inform buyers, so they know what they are asking for (e.g. quality, provenance, genetic diversity, certification/training status of the collector, ethical and legal collection practices), how to ask for it (e.g. required specifications), lead times required to collect/produce seed, how to evaluate whether the offered seed is of sufficient quality and how to store the seed. This includes awareness on the importance of flexibility to allow seed sellers to re-negotiate contracts following seed collection to account for seasonal and other variations.
  - An exchange portal. This will facilitate users to buy and sell seed and record pricing and contractual information where possible.
  - Buyer awareness and education activities to build demand among potential users of seed and to increase the buyer's willingness to pay for quality seeds, proportional to the cost of collection/production.

[11] M Pickup and T McDonald (2021). *Bushfire impacts — A national model for assessing local landscape restoration priorities*, Project Phoenix.
[12] SEED (2020). *Fire Extent and Severity Mapping (FESM).* NSW: NSW Government.
[13] R Gibson, T Danaher, E Hehir and L Collins (2020). A remote sensing approach to mapping fire severity in south-eastern Australia using sentinel 2 and random forest. *Remote Sensing of Environment*, 240, 111702.
[14] Data Vic (2020). *Fire severity map of the major fires in Gippsland and north east Victoria in 2019/20 (version 1.0)*. Victoria: Victorian Government.
[15] L Collins, P Griffioen, G Newell and A Mellor (2018). The utility of Random Forests for wildfire severity mapping. *Remote Sensing of Environment*, 216, 374–384.

- On the **supply** side, there needs to be a network-style exchange portal or regional network coordination of seed supply and demand systems that can feed into such a portal. This will enable seed suppliers to work together to fulfil demand for large or complex projects and to share information, resources and services and develop the sector.
  - Seed collectors need improved capacity and capability to record and provide information to government on native seed collection to facilitate greater knowledge of native seed sources and their sustainable use, permit/licensing approvals, support database development and maintenance (e.g. plant distribution databases & mapping).

Major activities

To deliver on **MARKET COORDINATION**, the following activities are needed:

2.a Hold an annual forum where participants from across the sector and the supply chain can network and discuss sector issues at a national and regional level. This should have specific sessions for different parts of the sector, including dissemination of R&D (see *Strategic Objective 3: Information and Knowledge*).

i. **Option 1**: a national event with a combined conference and exhibition (market stall) format with networking opportunities. These should be hosted annually in a different state or territory each year, and be funded through a system where people purchase tickets to attend the event (with multiple options for engaging). It should be considered whether it is practical to partner with an existing forum, such as the Landcare Annual Conference or the Australasian Seed Science Conference.

ii. **Option 2**: a series of state-based or regional events with a similar format to Option 1. This would be held at the same time each year in each state/region. This would use a mixed-media approach (face-to-face and online) where nationally-relevant information is provided through a digital platform and augmented with state/regional information sessions. This would be funded through a ticketed system (with multiple options for engaging).

2.b Develop a 'state of the industry'/'policy and planning sector summary' and build a dynamic spatial mapping database of future demand for seed, that is, upcoming projects (infrastructure builds and landscape management) and likely location of natural hazards. This would assess the possible requirements for seed (quantity, location and timing), with a focus on larger government-related projects.

i. **Option 1**: desktop review of upcoming projects (to be provided by funding agencies in a timely manner) with an assessment of the risk of the likelihood of the project going ahead.

ii. **Option 2**: work with federal and state/territory governments to get the required information to build a database. This could include contractual information.

iii. **Option 3**: work with existing seed databases to coordinate, update and make available relevant information.

2.c Design a networked exchange portal with a function to match buyers and sellers to support sharing of demand- and/or supply-side information.

i. **Option 1**: focus on providing demand-side information, such as pricing and contractual information to inform the sector on upcoming needs. This could be aligned with the dynamic mapping spatial database and link to bushfire severity data.

ii. **Option 2**: focus on supply-side and develop a national network of regional seed suppliers who can share information on what they have access to. This will allow suppliers to coordinate to fulfill contracts.

iii. **Option 3**: develop a single exchange that works for both the demand and supply sides of the market at both a national and a regional level.

2.d Identify and engage potential users of native seed to build a broader demand base.

i. **Option 1**: work with the native seed sellers to identify current niche buyers of native seed for expansion and potential new buyers. Develop and implement an awareness campaign to increase the number of buyers and quantum purchased.

2.e Work with native seed practitioners to build their capacity and capability to record and provide information.

i. **Option 1**: work with native seed practitioners to improve the collection of native seed collection data to improve knowledge of native seed sources and their sustainable use, permit/licensing approvals, support database development and maintenance (e.g. plant distribution databases & mapping).

Key performance indicators

- 1 year:
  - Planning for the inaugural annual forum commences.
  - Regional coordination networks are fostered and supported.
  - Work has begun on a 'state of the sector'/'policy and planning sector summary' for demand-side information.
  - Work has begun to inform/educate buyers of seed.
  - Work has begun on a universal database and an exchange portal for information sharing.
  - Work has begun to identify current niche buyers and new potential buyers of native seed for expansion.
- 2 years:
  - The inaugural annual forum is held.
  - Awareness campaign is delivered.
  - Policy, program and permit/licensing decisions are better informed.

- 3 years:
  - Infrastructure, services and resources are better shared/accessed.
  - Quality of the seeds bought and sold improves due to better buyer awareness driving higher quality standards.
  - Policy, program and permit/licensing decisions are better informed.
  - Sector participants understand how the native seed sector is positioned within the broader policy system (i.e. climate, agriculture, emergency response).
  - The native seed sector is more aware of relevant issues and has a better coordinated voice and action.
  - Native seed is purchased by a broader range of buyers.
- 5–10 years:
  - Achieve more progress on the three-year KPIs.

STRATEGIC OBJECTIVE 3: INFORMATION SHARING

Rationale

The native seed sector faces challenges in accessing a range of information such as best practices, techniques and approaches (in addition to market information). A lack of accessible information hinders the development of the sector, including capacity building as well as decision-making by businesses, institutions and policy makers. Better coordination of and access to information across the sector is essential for the sector to mature.

Two critical components of capacity building are coordinating existing knowledge and generating, applying and disseminating new knowledge through R&D.

A core area of existing knowledge that needs to be made more available is regional native species and distribution guides for all regional NRM/Landscape Regions. This is needed to set the benchmark of regional needs and support plant outcomes through knowledge and research. This can be used as a tool for specific research and knowledge needs.

R&D aims to better understand and improve seed storage, use and conditions to achieve optimal results. Beyond this, R&D could:

- build capacity in the sector
- increase visibility of demand/market transparency (see Strategic Objective 2: Market Coordination)
- investigate new market opportunities, emerging issues (e.g. climate-adjusted translocation), and novel uses of native seed
- distribute the evidence base on why and how native seed can achieve conservation, restoration and commercial outcomes (e.g. using the Healthy Seeds Project16)
- embrace and value Traditional Owners' knowledge and perspectives and explore opportunities for two-way learning
- coordinate across the sector to share lessons and focus on the areas of most need
- build native seed knowledge across the native seed sector.

[16] Australian Network for Plant Conservation (2021). *Healthy seeds for resilient restoration*. Accessed 1 June 2021: https://www.anpc.asn.au/healthy-seeds/.

Frameworks for structuring and funding R&D can be leveraged from existing platforms as identified in *Activity 2.9 Applied research — Communities of practice, people and science*,[17] including, for example:

- **AgriFutures Australia's Emerging Industries Program**, which is designed to develop industries through R&D and capacity building.[18]
- **Australian Government Biodiversity Stewardship**, which supports innovation and trialling of new programs to help farmers to increase biodiversity on their land. The program will include a Biodiversity Trading Platform to connect farmers with buyers of biodiversity outcomes to support private biodiversity markets.[19]
  - **This includes the Australian Government Carbon + Biodiversity Pilot**, which is trialling a market-based approach to reward farmers for improving on-farm biodiversity, together with carbon projects under the Emissions Reduction Fund.[20]
- **Australian Government National Environmental Science Program** (NESP), which funds environment and climate research to build the evidence base for decision-makers and support positive environmental, social and economic outcomes.[21]
- **Australian Government Research and Development Tax Incentive** (RDTI), to offset some of the cost of eligible R&D activities undertaken by businesses to gain access to expert resources to conduct R&D (through self-R&D or a Research Service Provider).[22]
- **Australian Research Council Linkage Projects**, which enable long-term strategic research partnerships to use and transfer skills, knowledge and ideas, and support innovation and commercialisation.[23]
- **CSIRO's Innovation Connections**, which 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, and provides access to competitive funding.[24]

[17] L Baker (2021). *Applied research — Communities of practice, people and science*. Project Phoenix.
[18] AgriFutures Australia (2021). *About the AgriFutures Emerging Industries Advisory Panel.* Rural Industries Research & Development Corporation. Retrieved from https://www.agrifutures.com.au/emerging-industries-advisory-panel/.
[19] Australian Government Department of Agriculture, Water and Resources (2021). *Biodiversity Stewardship*. Retrieved from https://www.awe.gov.au/sites/default/files/2021-05/biodiversity-stewardship-factsheet.pdf
[20] Australian Government Department of Agriculture, Water and Resources (2021). *Carbon + Biodiversity Pilot*. Retrieved from https://www.agriculture.gov.au/ag-farm-food/natural-resources/landcare/sustaining-future-australian-farming/carbon-biodiversity-pilot
[21] Australian Government Department of Agriculture, Water and Resources (n.d.). *National Environmental Science Program.* Retrieved from https://www.environment.gov.au/science/nesp.
[22] Australian Taxation Office. (2021). *Research and development tax incentive.* Retrieved from https://www.ato.gov.au/Business/Research-and-development-tax-incentive/
[23] Australian Research Council. (2021). *Linkage Projects.* Commonwealth of Australia. Retrieved from https://www.arc.gov.au/grants/linkage-program/linkage-projects
[24] CSIRO (2021). *Innovation Connections.* Retrieved from https://www.csiro.au/en/work-with-us/funding-programs/programs/innovation-connections/about-the-program.

Key areas of focus for applied R&D for the sector include:

- Biodiscovery — novel uses for native seed (noting the potential implications of rights and benefit sharing with Traditional Owners, as outlined under the Nagoya Protocol).[25]
- Native seed biology, genetics and germination — improving our understanding of and developing good practice approaches for germinating challenging species (i.e. seed enhancement technology, direct seeding guides for different vegetation, topography and soil types). This will build our understanding of the technologies and methods needed for seed production, storage and use and monitoring and maintenance. This should consider the impact of and building resilience to climate change and exploring conservation genetics.
- Unknown taxa and flora — exploring and documenting unknown taxa and flora. This may also contribute economic benefits to Australia.[26]
- Building scale and developing markets — growing the capacity of the sector to prepare for and respond to large-scale events and to contribute to areas such as domestic food supply, including:
  - native ornamentals/garden/landscapes and
  - native foods/ bush foods industry.
- Developing tools (i.e. technologies, systems) to better collect, store and make use of native seed data.

Goal

To support the native seed sector through access to new and existing knowledge, that is readily available, accessible and applied to support practices.

This will mean, the native seed sector is better:

- informed to grow
- coordinated to reduce overlap and duplication of effort, leverage skills and capabilities and improve the efficient use of limited resources
- placed to maximise opportunities and minimise risks
- connected with Traditional Owners to include cultural knowledge and needs into the native seed sector.

[25] Convention on Biological Diversity (2014). The Nagoya Protocol on Access and Benefit-Sharing. Accessed 4 August 2018: https://www.cbd.int/abs/.
Australia is not currently a signatory to the Nagoya Protocol under the UN Convention of Biodiversity.
[26] Deloitte Access Economics (2021). *Cost benefit analysis of a mission to discover and document Australia's species for the Australian Academy of Science*. Perth: Deloitte Access Economics.

Major activities

To deliver on **INFORMATION AND KNOWLEDGE**, the following activities are needed:

3.a Develop a single connected network of information databases on areas relevant to native seed — a 'one-stop-shop' approach.

i. Option 1: A connected network of existing online databases of information designed to:

- Be regionally focused and geographically linked for each NRM/Landscape Region and should include:
  - native species and distribution guides[27]
  - basic and applied R&D
  - capacity e.g. skills, services, infrastructure and resources (funding, equipment etc.)
  - information on how to access land (licensing/permits/guidelines)
  - information on native seed standards
  - education and training (tailored to the needs of the region and easy to use, including resources and training workshops)
  - native seed location data as provided by native seed collectors
  - linked to the market-based information system described in *Strategic Objective 2: Market Coordination and Bushfire impacts — A national model for assessing local landscape restoration priorities*.[28]
- Be able to be wrapped up for a national perspective and filtered by location, to support local coordination.
- Resemble an open-source, Wikipedia-style platform, where users share information and links to existing databases. The quality of information is curated by the database users.
- Be financially supported through a revenue stream, such as advertising or a subscription/membership-based model (with multiple options for engaging or classes of membership).
- Be hosted and implemented by an existing organisation/information provider.
- Have annual sector summaries produced, which provide a summary of information on developments across the key areas.

[27] For example, the Australian Native Plants Guide (Australian Plants Society (Victoria)) and Plants & Fungi: Field and Regional Guides (CSIRO).
https://apsvic.org.au/australian-native-plants-guide/ and
https://www.publish.csiro.au/PlantsAndFungi/FieldAndRegionalGuides.

[28] Pickup and McDonald (2021). Op cit.

3.b Develop and adopt an outcomes-focused and collaborative R&D framework with priorities for the native seed sector. This should be led by a 'peak body' with members from across the sector.

i. **Option 1**: use existing structures and funding to develop and deliver practical outcomes on R&D priorities that are co-designed across the sector in conjunction with regional networks needs and activities.

3.c Work with providers and potential providers of native seed education and training to strengthen the range and quality of education and training provided, to ensure the future workforce and general public are aware of and equipped to value and work with native seed. This should include a focus on strengthening Traditional Owner capacity (through culturally appropriate training for existing and new sector participants and funding for local communities to conduct face-to-face and on Country training) and learning from Traditional Owners.

i. **Option 1:** build the reach of existing education providers, such as the nationally accredited Certificate II in Conservation and Land Management[29] and the Aboriginal Landcare Education Program,[30] and work with Traditional Owners, schools, nurseries and councils to extend existing education materials.

3.d Work with Traditional Owners to co-design the adoption and extension of existing protocols for engaging in services with Traditional Owners. This should provide guidance for both Traditional Owners and those seeking to work with Traditional Owners to arrange for appropriate fee for service arrangements prior to sharing traditional knowledge of and access to Country.

i. **Option 1**: adopt and extend existing protocols for how Traditional Owners and those seeking to work with Traditional Owners should develop engagement arrangements. This could include consideration of:

- National Environmental Science Programme Indigenous Engagement and Participation Strategy Guidelines, Australian Government Department of the Environment and the National Environmental Science Programme[31]
- Australian Institute of Aboriginal and Torres Strait Islander Studies (AIATSIS) Code of Ethics for Aboriginal and Torres Strait Islander Research 2020[32]

[29] Australian Government (n.d.). *AHC21016 – Certificate II in Conservation and Land Management (Release 3).* Accessed 4 August 2021: https://training.gov.au/training/details/ahc21016.
[30] Greening Australia (2018). *Aboriginal Landcare Education Program*. Accessed 4 August 2021: https://www.greeningaustralia.org.au/projects/alep/.
[31] Australian Government Department of the Environment and the National Environmental Science Programme (2015). *National Environmental Science Programme Indigenous Engagement and Participation Strategy Guidelines*. Canberra: Australian Government.
[32] Australian Institute of Aboriginal and Torres Strait Islander Studies (2020). *AIATSIS Code of Ethics for Aboriginal and Torres Strait Islander Research*. Canberra: AIATSIS.

- Our Knowledge Our Way in caring for Country: Indigenous-led approaches to strengthening and sharing our knowledge for land and sea management. Best Practice Guidelines from Australian experiences, North Australian Indigenous Land and Sea Management Alliance Ltd and CSIRO[33]
- The Nagoya Protocol on Access and Benefit-Sharing, United Nations Convention on Biological Diversity[34]
- *Collection Protocol Biodiscovery Act 2004*, Queensland Government Department of Environment and Science.[35]

Key performance indicators

- 1 year:
  - Develop and promote existing online regional native species and distribution guides.
  - An online database is established.
  - Native seed sector participants leverage opportunities to secure R&D funding from existing models.
  - The 'peak body' engages with the sector to develop R&D priorities.
  - The 'peak body' engages with the sector to identify existing education and training programs that can be expanded and any gaps where new programs should be developed.
  - A culturally appropriate protocol is developed to guide engagement between Traditional Owners and those seeking to work with Traditional Owners.
- 2 years:
  - The online database is updated and used by native seed sector participants.
  - Native seed sector participants can meet face-to-face at an annual forum.
  - Intended R&D outcomes, priorities and activities are identified by the native seed sector.
  - Cross-sectoral R&D partnerships are established based on intended R&D outcomes.
  - Annual sector summaries (policy, R&D, funding, training, etc.) are published.
  - Traditional Owners are better engaged and remunerated for sharing knowledge and access to Country.
  - Traditional Owners' knowledge is respectfully represented in training, including the understanding of traditional seed management and why methods are specific to native seed.

[33] Woodward, Hill, Harkness and Archer (eds) (2020). Op cit.
[34] Convention on Biological Diversity (2014). Op cit.
[35] Queensland Government Department of Environment and Science (2019). *Collection Protocol Biodiscovery Act 2004*. Queensland: Queensland Government.

- 5–10 years:

  The online database and face-to-face engagement drive collaboration and coordination across the sector, informed decision-making and more efficient use of resources:

  - Better availability of information drives more informed R&D priorities. This includes monitoring progress towards and updating R&D outcomes over time.
  - R&D is better coordinated and it becomes less common for areas of the sector to operate in silos.
  - R&D is delivered according to the sector's intended outcomes.
  - Knowledge is built on seed banking techniques, seed ecology, germination, plant populations and seed resource information, taxonomy, genetics and the impacts of climate change.
  - Skills, education and training are more accessible and transferred, which builds the capacity of the sector and retains and attracts new employees.
  - The native seed sector is more aware of relevant issues and has a more coordinated voice and action.
  - Existing education programs are expanded to meet the demand for education.
  - Education gaps are filled by building on existing programs or developing new programs.
  - Traditional Owners are better engaged and remunerated for sharing knowledge and access to land.
  - Traditional Owners' knowledge is respectfully represented in training, including the understanding of traditional seed management and why methods are specific to native seed.

STRATEGIC OBJECTIVE 4: NEW INDUSTRIES

Rationale

New industries will boost the value of the sector and can help build resilience to a changing climate. There are two primary industry development opportunities:

- **Specialist niches**: industries with a low number of species and premium products, for example native foods/bushfoods, ornamentals/cut flowers, biodiscovery, medicines and beauty and fashion etc.
- **Bulk products**: industries with a large scale of land and species, for example carbon or biodiversity offsets, native grasses and seeds as feedstocks.

New industries are more likely to grow and invest in innovation if there is a supportive, thriving community. The bigger the ecosystem, the more efficiently businesses can access resources (e.g. specialist services), the greater knowledge sharing and potential for spill-over benefits and the lower the risk of investing in innovation.[36]

New industries that have emerged in recent years could also benefit from recruiting new participants, for example the large commercial sectors of mining and agriculture have a large potential to contribute to a response on climate change, carbon sequestration and encouraging and maintaining biodiversity.

Given that the native seed sector has limited resources, the 'peak body' is unlikely to be able to specifically support new and emerging industries to develop. As such, new industries should use existing supports, such as:

AgriFutures Australia's Emerging Industries Program[37] supports a number of emerging rural industries, including native plants such as Kakadu plum and native pepper. It uses a phased approach to industry development through Research, Development and Extension (RD&E) from 'Prospecting' through 'Growing industry capability' to 'Consolidation'.

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

A panel advises on the current state of emerging rural industries, recommendations aligned with AgriFutures' research priorities, dissemination, adoption and commercialisation of R&D, and encourages partnerships, industry contributions and co-investment. This approach would be suitable for use in specialist niches and bulk products.

[36] https://www.industry.gov.au/data-and-publications/stimulating-business-investment-in-innovation/strategic-recommendation-2

[37] AgriFutures Australia (2021). Op cit.

Australian Government Research and Development Tax Incentive[38] (RDTI) is a national scheme that provides a tax benefit to offset some of the cost of undertaking eligible R&D activities. The RDTI provides an incentive for businesses to undertake R&D or for smaller businesses to access expert R&D services by partnering with registered Research Service Providers (universities, CSIRO and private companies that are approved by the Australian Government). The objectives of the RDTI are to boost competitiveness and productivity across the economy by encouraging industry and smaller firms to undertake R&D and additional R&D. This approach would be suitable for use in specialist niches and bulk products.

Biodiversity offsetting through the **Australian Government Biodiversity Stewardship**[39] including the **Australian Government Carbon + Biodiversity Pilot**.[40]

These programs support the development of the biodiversity and carbon offset industries by providing incentives to farmers to increase the biodiversity on their land and connect buyers and sellers of biodiversity outcomes. This approach would be suitable for use in specialist niches and bulk products.

Australian Government Business supports Australian businesses by providing information, grants, and services from across government.[41] This approach would be suitable for both specialist niches and bulk products.

Goal

To foster the growth of new and emerging industries to increase economic activity.

This will boost economic activity in the native seed sector, help build resilience to climate change and create opportunities across existing parts of the sector and develop new areas.

[38] Australian Taxation Office (2021). Op cit.
[39] Australian Government Department of Agriculture, Water and Resources (2021). *Biodiversity Stewardship*. Retrieved from https://www.awe.gov.au/sites/default/files/2021-05/biodiversity-stewardship-factsheet.pdf
[40] Australian Government Department of Agriculture, Water and Resources (2021). *Carbon + Biodiversity Pilot*. Retrieved from https://www.agriculture.gov.au/ag-farm-food/natural-resources/landcare/sustaining-future-australian-farming/carbon-biodiversity-pilot.
[41] Australian Government (2021). *Support for businesses in Australia*. Retrieved from https://business.gov.au/.

Major activities

To deliver on **NEW INDUSTRIES**, the following activities are needed:

4.a Ensure sector participants are aware of existing mechanisms for industry development funding, knowledge and support, supported by the R&D framework and the network of online databases.

i. **Option 1**: leverage AgriFutures Emerging Industries Program. This can be done on an industry by industry basis or as a consortia with a focus on specialist niches.

ii. **Option 2**: use information compiled in the policy sector summary to understand opportunities for bulk products such as the Australian Government Carbon + Biodiversity Pilot.

iii. **Option 3**: both option 1 and option 2.

4.b Develop new industries and recruit new participants to industries through better regional coordination and collaboration across regional sector participants through organised events (through the network of online databases and annual forum (see *Strategic Objectives 2* and *3*).

Key performance indicators

- 1 year:
  - The online database stores information on the availability of resources (infrastructure, funding etc.), skills, knowledge etc.
  - Establish and support regional coordination in identified priority locations.
- 2 years:
  - Sector participants developing new and emerging industries have access to information and resources.
  - Sector participants form partnerships to develop new and emerging industries.
  - Sector participants increasingly use existing support programs.
  - Existing support programs receive more applications and requests related to native seed/plants/products.
- 5–10 years:
  - Opportunities to develop new industries are better explored.
  - More native seed/plants/products industries are supported by existing support programs.
  - The scale and number of industries related to native seed increases.

STRATEGIC OBJECTIVE 5: SMARTER REGULATION

Rationale

The regulatory system governing the native seed sector is complex. The *Environment Protection and Biodiversity Conservation (EPBC) Act 1999* (*EPBC Act 1999*) allows the Australian Government to join with the states and territories enabling a truly national scheme to protect the environment, heritage and biodiversity conservation.[42] The other related areas that are governed through federal and state-based legislation are:

- access to land owned by different groups under a large number of jurisdiction-based environmental planning Acts and jurisdictional conservation covenants that are important in defining land tenure and
- access to land across Australia including: Crown land, native title, national parks, travelling stock reserves, roadside land, water, reservoirs and dams, carbon planting sites, forestry and mine rehabilitation sites.

Work conducted as part of Project Phoenix provides some high-level findings on the role of regulation.

Psst... Everything you wanted to know about native seed licensing[43] provides a high-level overview of the national licensing and regulatory system that governs native seed. The key findings of this review are:

- Licensing systems are highly variable across jurisdictions.
- In some states/territories, more than one permit is required.
- Application processes are not easy to understand, information on cost and time frames is not clearly displayed, and the time taken for a licence/permit to be assessed or renewed is burdensome.
- Not fit-for-purpose in supporting ecological outcomes.
- Only the ACT has an online portal that is clear and easy to use (NSW has an online portal, yet only for a scientific licence).
- Costs vary between free and $290 per annum; some licences are annual and some are for up to five years.

[42] https://www.environment.gov.au/epbc/about
[43] Z Birnie (2021). *Psst... Everything you wanted to know about native seed licensing*, Project Phoenix.

Everything you wanted to know about access to land for native seed collection[44] provides a high-level overview of the legislation that governs land access for native seed. The key findings of this review are:

- In addition to the *EPBC Act 1999*, there are a large number of jurisdiction-based environmental planning Acts and conservation covenants (agreements) that are important in defining land tenure and access across Australia.
- There are requirements for seed collectors (for commercial and private use and conservation) to have a licence/permit to access land to collect seed. This is in addition to any licence granted to collect seed.
- Permissions for (non-private) land access are administered at local, state and federal government levels.

Goal

To better protect threatened species, biodiversity and land tenure while improving access (supply) through smarter regulation.

Reviewing, amending and harmonising state and territory legislation and regulations that relate to the *EPBC Act 1999* can assist in better protecting threatened species, controlling land access/property rights, protecting traditional knowledge/intellectual property and supporting the development of the native seed sector.

This is a complex task especially as many of these regulatory instruments focus on a range of issues, not just the native seed sector (e.g. the *EPBC Act 1999* and environmental planning Acts) and can have statutory time frames for review that do not align across jurisdictions.

To start with, gains for the sector can be achieved by focusing only on a cross-jurisdictional review, reform and harmonisation of the state and territory licences/permits related to the *EPBC Act 1999* that concern native seed collection.

The sector needs a risk and principles-based licence/permit system inspired by a set of national guidelines allowing states/territories flexibility in administration, maintaining species and diversity protection, and making it easier to do business. This will reduce the unnecessary regulatory burden on businesses (including cost) and duplication, clarify legislative 'grey areas', make the requirements more uniform and streamline the processes across all jurisdictions (including arrangements with Commonwealth, state and territory and local governments).

[44] Z Birnie (2021). *Everything you wanted to know about access to land for native seed collection*, Project Phoenix.

This would seek to emulate, for example, the approach taken by the animal welfare industry to harmonise and reduce the differences between federal and state-based legislation through a set of standards and guidelines.[45]

There is a role for a state/regionally-based data repository, monitoring and reporting to ensure that permit/licensing decision are evidence based and enable sustainable native seed collection.

Major activities

5 Conduct a cross-jurisdictional good practice[46] review of licensing and permits relating to native seed collection for all states and territories. This should consider (but not be limited to):

i. Understanding the need for licences/permits and ensuring that any licence/permit is fit-for-purpose. This should ask:

- are licensing/permits the most appropriate regulatory tool for each part of the native seed sector: conservation, rehabilitation, Traditional Owners, forestry, nursery/horticulture and offsets?
- what is the role of regional coordination, accreditation and database systems to meet the needs of compliance and data recording, reporting and amalgamation?
- are other tools better suited to achieving these outcomes?

ii. Providing accessible information (where appropriate) on the licence's:

- purpose
- end user and uses
- cost and duration
- requirements
- restrictions on the amount of native seed that can be collected for different land types, threatened species and vegetation communities.

iii. Reducing burden on collectors/small businesses:

- clear information on licence requirements
- ease of application process (time, cost, online access)
- time taken to approve/grant
- costs of compliance.

[45] Australian Animal Welfare Standards and Guidelines (2020). *Australian Animal Welfare Standards and Guidelines*. Accessed 5 August 2021: http://www.animalwelfarestandards.net.au/.
[46] Review should be in line with good practice principles of licensing e.g. https://www.ipart.nsw.gov.au/files/sharedassets/website/trimholdingbay/pwc_-_a_best_practice_approach_to_licensing_schemes_-_guidance_material_-_march_2013.pdf

iv. Pricing licence fees in line with the cost to government to administer the licence, with appropriate transition periods.

v. Reducing duplication across borders (cross-border collection requires multiple permits).

vi. Making local and state government permits more uniform.

vii. Streamlining compliance/reporting requirements across jurisdictions.

Key performance indicators

- 1 year:
  - A good practice review of the licensing/permits in the sector under the *EPBC Act 1999* is conducted.
  - Areas of reform are identified.
- 2 years:
  - Reviews at a state and territory level (or where devolved to local government, at a local government level when a review of relevant state government legislation is conducted) occur on cost recovery, compliance and delivery of licences/permits.
  - Improved information collection to inform permit/licensing agencies.
- 3 years:
  - A set of national principles/guidelines to inform the jurisdictional regulation are developed.
- 5–10 years:
  - Reforms are implemented across jurisdictions (based on sector outcomes) guided by national principles.
  - There is less burden on seed collectors and the government, in terms of cost and time taken to apply for, comply with, report against and monitor compliance with licences/permits.
  - There is consistency across jurisdictions in terms of costs and processes.
  - There is better awareness of licensing/permit requirements.
  - Seed collectors find it easier to work across jurisdictions.
  - There is better access to and protection of land and species and more secure supply.

STRATEGIC OBJECTIVE 6: SECTOR LEADERSHIP

Rationale

The diversity of the sector means that there are many groups involved in its development. Yet each is focused on a specific area within the sector and no single group can provide overall leadership. This limits the ability of the sector to:

- represent and promote itself
- provide/coordinate services to underpin development and
- implement this *Strategy*.

Goal

To develop a vehicle for coordinated action in the sector to ensure strategic leadership and foster future growth and development of the sector.

Leadership functions important for developing the sector include:

- implementing this *Strategy*
- representing the sector in policy processes
- promoting the use of native seed and better native seed practices
- setting quality standards and providing accreditation
- facilitating networks, sharing information and
- offering training.

The notion of establishing a 'peak body' to lead the sector and provide all or some of these functions has been noted and recommended previously. The real question is: *how and when can this be achieved?* In practice, three criteria need to be met to allow the leadership function to emerge:

- alignment of interests — between the businesses, associations and others across the sector to establish a clear identity and agenda
- value proposition — the services offered are unique to, or best delivered at a sectoral level
- financial viability — leading organisations and individuals are willing and able to provide the resources needed to lead or support the 'peak body'.

Alignment of interests

The sector shares an interest in improving knowledge about and the use of native seed, yet not always on the outcomes this achieves. However, there are a number of areas where stakeholders' interests align:

- Businesses and organisations who provide and/or plant native seed are seeking practical standards and ways to improve. They are interested in promoting wide-spread use of native seed for many purposes.
- There is a shared interest in understanding native seed in more detail (e.g. specific species/locations and conservation/restoration techniques).
- Participants are seeking to understand and pursue new partnerships and uses of native seed for economic/cultural purposes.

Value proposition

These interests surround *Strategic Objective 1: Quality*. Leadership can provide practical guidance, a grounding for internal business and market quality systems, and in time, accreditation.

Representation in policy is the most challenging value proposition. Different areas of the sector focus on different outcomes and there are existing organisations that fulfill the function. The number of policy areas involved include, but are not limited to, biodiversity conservation (threatened and non-listed species), landscape restoration, offsets, natural resource management, landcare, land-use planning, Traditional Owner affairs, development of non-profits and (small) business/industry and taxation. Finding a practical mechanism to reach agreement and represent the sector across a range of policies is not possible in the short-term.

Networks, coordination, information sharing and training are needed to create links across the sector, improve service provision and build the identity of the sector. While this function would be the easiest to deliver nationally, it is best delivered at a regional level or by other existing groups such as Landcare and NRM/Landscape Regions rather than by a 'peak body', potentially enabled through a nationally agreed package.

Financial viability

The sector needs resources to create and then sustain its leadership function. At present, the sector relies on the goodwill of key organisations and periodic grants (e.g. Project Phoenix). To be sustainable, the sector needs to be willing to invest in leadership, through direct participation, membership subscriptions, fee-for-service approaches and/or sustained government or private grants.

Major activities

There is no best way to achieve sector leadership. The sector needs to adaptively form its leadership by using existing groups and structures (i.e. a phased approach) until there is a clear need and support for a new or re-purposed structure.

The first and most obvious activity is to create a group to implement the *Strategy*. This could be a coalition, which:

- should include participants from across the sector (conservation, restoration, rehabilitation, commercial, non-profit, mining, infrastructure, agriculture, forestry, Traditional Owners etc.) and government members
- could be structured as an informal coalition or formal partnership and
- should be tasked with overseeing, rather than implementing the *Strategy*.

The other major activity is to progress an independent 'peak body', which can attract members from businesses that depend on providing and/or using native seed. The 'peak body' could support the ongoing development and promotion of the sector standards.

6.a Establish a joint industry-government coalition to oversee the *Strategy*.

i. **Option 1**: convene a (bi)annual forum to monitor *Strategy* progress.

ii. **Option 2**: develop a partnership agreement (with state/regional representatives) to implement the *Strategy*.

6.b Foster a national member based 'peak body'

i. **Option 1**: establish a 'peak body' (new or from an existing organisation i.e. a chapter of Australian Seed Federation).

ii. **Option 2**: establish a 'peak body' to promote the standards.

Key performance indicators

- 1 year:
  - *Strategy* leadership group agreed and operating.
- 2 years:
  - Peak industry body active.
- 3 years:
  - Review the *Strategy* and leadership needs of the sector.
- 5–10 years:
  - The sector is more aware of relevant issues and has a more coordinated voice and agenda for action.

NEXT STEPS

This chapter focuses on implementing the *Strategy*, including identifying where the priorities lie and the preferred options for delivering and evaluating the *Strategy* over time.

Where do the priorities lie — analysis of options

The major activities proposed are extensive and include options. These will require commitment and resources beyond what is available that will need to be secured from industry, government and others during implementation. The activities also do not need to occur simultaneously. To assist prioritisation, a multi-criteria analysis of the major activities and options was conducted using a relative qualitative assessment based on all the *Strategy* inputs (see **Table 1**). The criteria are:

- potential for impact — to significantly contribute to the Strategic Objective within 5–10 years
- capacity for ownership — within sector for an organisation/group to lead the activity/option
- reach across sector — distribution of the impact across the sector
- ease of implementation — effort, cooperation and resources to implement the activity/option
- probability of success — measure of risk association with the activity/option.

The key assessment insights against each of the Strategic Objectives are as follows:

Strategic Objective 1: **Quality**

- Focus needs to be on agreeing to a national framework of existing standards and their promotion and adoption. The updated *FloraBank* and *Germplasm Guidelines* are due for release and are aligned with leading domestic and international standards.
- This will require clarifying ownership and establishing a promotional/adoption program.

Strategic Objective 2: **Market coordination**

- A schedule of regionally-based events (through the NRM/Landscape Regions, Landcare and/or industry groupings) is needed to facilitate information sharing and networking accompanied by a widely-circulated regular sector summary of trends and opportunities.
- There is potential for demand and/or supply side brokerage of native seed. A single national brokerage is not necessary given sectoral diversity. A commercial brokerage on a regional level is preferable as most projects require regional/local seed for regional/local projects.

Strategic Objective 3: **Information sharing**

- Improving online information provision linked to market coordination activities will assist market transparency and more appropriate values of native seed.
- Co-designing R&D priorities with a focus on public good will improve R&D support/outcomes.
- Building the range and quality of education and training will support the workforce.
- Co-designing protocols for engaging in services with Traditional Owners is central to stronger partnership.

Strategic Objective 4: **New industries**

- Needs to engage on the *Strategy* and alignment but recognise initiatives may be run separately.

Strategic Objective 5: **Smarter regulation**

- Improving permits/licensing is a national priority for government across all jurisdictions.

Strategic Objective 6: **Sector leadership**

- Establishing transitional leadership following Project Phoenix is a priority, focused on *Strategy* implementation.
- Establishing a peak body to represent businesses whose viability is based on providing and/or planting native seed.

Qualitative assessment of the priorities for each Strategic Objective is not definitive. Views will vary across the sector according to the perspectives of stakeholders. As part of the *Strategy* consultation, stakeholders are encouraged to complete the multi-criteria assessments.

TABLE 1. RELATIVE ASSESSMENT OF THE MERITS OF OPTIONS FOR IMPLEMENTING THE STRATEGIC OBJECTIVES

OPTION		SECTOR PRIORITIES	POTENTIAL FOR IMPACT	CAPACITY FOR OWNERSHIP	REACH ACROSS SECTOR	EASE OF IMPLEMENTATION	PROBABILITY OF SUCCESS
STRATEGIC OBJECTIVE 1: TO AGREE ON, PROMOTE AND ACTIVELY ADOPT ONE 'LIVING' SET OF NATIONAL BEST PRACTICE STANDARDS (OR CODE OF PRACTICE) FOR (VOLUNTARY) USE ACROSS THE SECTOR							
1.a	**Develop a single nationally agreed framework for standards.**						
1.a.i	Adopt an existing standard(s) but ensure this can be adapted, as needed.	●	●	●	◑	◔	◔
1.a.ii	Develop a new framework, while making use of existing standard(s).	◑	◔	◔	◑	◑	◑
1.b	**Locate an 'owner' for the standard(s), ideally independent and with existing processes and systems, to maintain and further develop the standard(s).**						
1.b.i	Find an existing independent body.	◔	◔	N/A	◑	◕	◔
1.b.ii	Establish a new body to own the standard(s).	◑	●	N/A	◔	◔	◕
1.c	**Promote the benefits of using standard(s) to larger seed suppliers and seed purchasers.**						
1.c.i	Work with governments and large seed purchasers to align contracts with standard(s).	◑	●	◑	◕	◔	◑
1.c.ii	Develop schedules for governments and large seed purchasers to readily incorporate the standard(s) into their contracts.	◔	◔	◑	◕	◕	◑
STRATEGIC OBJECTIVE 2: TO ENABLE THE NATIVE SEED SECTOR TO IMPROVE COORDINATED MARKET DECISIONS BY BETTER SHARING MARKET-BASED INFORMATION AND CONNECTING ORGANISATIONS AND NETWORKS							
2.a	**Hold an annual forum where participants from across the sector and the supply chain can network and discuss sector issues.**						
2.a.i	A national event with a combined conference and exhibition (market stall) format with networking opportunities.	◑	◔	◕	●	◑	◔
2.a.ii	A series of state-based or regional events held at the same time each year in each state/region.	◔	●	◑	●	◑	◔

OPTION		SECTOR PRIORITIES	POTENTIAL FOR IMPACT	CAPACITY FOR OWNERSHIP	REACH ACROSS SECTOR	EASE OF IMPLEMENTATION	PROBABILITY OF SUCCESS
2.b	**Develop a 'policy and planning sector summary' and build a dynamic spatial mapping database of upcoming projects (infrastructure builds and landscape management).**						
2.b.i	Desktop review of upcoming projects with an assessment of the risk of the likelihood of the project going ahead.						
2.b.ii	Work with federal and state/territory governments to get the required information to build a database.						
2.b.iii	Work with existing seed databases to coordinate, update and make available relevant information.						
2.c	**Design a networked exchange portal with a brokerage function to support sharing of demand- and/or supply-side information.**						
2.c.i	Focus on providing demand-side information, such as pricing and contractual information to inform the sector on upcoming needs.						
2.c.ii	Focus on supply-side and develop a network of seed suppliers who can share information on what they have access to.						
2.c.iii	Develop a single exchange that works for both the demand and supply sides of the market.						
2.d	**Identify and engage potential users of native seed to build a broader demand base.**						
2.d.i	Develop and implement an awareness campaign to increase the number of buyers of native seed and quantum purchased.						
2.e	**Work with native seed practitioners to build their capacity and capability to record and provide information.**						
2.e.i	Work with native seed practitioners to improve the collection of native seed collection data.						

OPTION		SECTOR PRIORITIES	POTENTIAL FOR IMPACT	CAPACITY FOR OWNERSHIP	REACH ACROSS SECTOR	EASE OF IMPLEMENTATION	PROBABILITY OF SUCCESS
STRATEGIC OBJECTIVE 3: TO SUPPORT THE NATIVE SEED SECTOR THROUGH ACCESS TO NEW AND EXISTING KNOWLEDGE, THAT IS FREELY AVAILABLE, ACCESSIBLE AND APPLIED TO SUPPORT PRACTICES							
3.a	**Develop a single connected network of information databases on areas relevant to native seed — a 'one-stop-shop' approach.**						
3.a.i	A multipurpose connected network of existing online databases.						
3.b	**Develop and adopt an outcomes-focused and collaborative R&D framework with priorities for the native seed sector.**						
3.b.i	Use existing structures and funding to develop and deliver practical outcomes on R&D priorities that are co-designed across the sector.						
3.c	**Strengthen the range and quality of education and training provided, including strengthening Traditional Owner capacity and knowledge transfer.**						
3.c.i	Build the reach of existing education providers and work with Traditional Owners, schools, nurseries and councils to extend existing education materials.						
3.d	**Work with Traditional Owners to co-design the adoption and extension of existing protocols for engaging in services with local Traditional Owners.**						
3.d.i	Adopt and extend existing protocols for how Traditional Owners and those seeking to work with Traditional Owners should develop engagement arrangements.						
STRATEGIC OBJECTIVE 4: TO FOSTER THE GROWTH OF NEW AND EMERGING INDUSTRIES TO INCREASE ECONOMIC ACTIVITY							
4.a	**Ensure sector participants have access to industry development funding, knowledge and support through existing mechanisms.**						
4.a.i	Leverage AgriFutures Emerging Industries Program.						
4.a.ii	Use information compiled in the policy sector summary (2.b) to understand opportunities for bulk products.						
4.a.ii	Both 4.a.i and 4.a.ii						

OPTION		SECTOR PRIORITIES	POTENTIAL FOR IMPACT	CAPACITY FOR OWNERSHIP	REACH ACROSS SECTOR	EASE OF IMPLEMENTATION	PROBABILITY OF SUCCESS
4.b	**Develop new industries through better coordination and collaboration across sector participants (2.a and 3.a).**						
STRATEGIC OBJECTIVE 5: TO BETTER PROTECT THREATENED SPECIES, BIODIVERSITY AND LAND TENURE WHILE IMPROVING ACCESS (SUPPLY) THROUGH SMARTER REGULATION							
5.	**Conduct a cross-jurisdictional good practice review of licensing and permits relating to native seed collection.**						
STRATEGIC OBJECTIVE 6: TO DEVELOP A SINGLE VOICE FOR COORDINATED ACTION IN THE NATIVE SEED SECTOR TO ENSURE STRATEGIC LEADERSHIP AND FOSTER FUTURE GROWTH AND DEVELOPMENT OF THE SECTOR							
6.a	**Establish a coalition to maintain leadership dialogue and implement the *Strategy*.**						
6.a.i	Convene a (bi-annual) forum to monitor and manage implementation with representation across all sub-sectors and the supply chain.						
6.a.ii	Develop a partnership agreement to implement the *Strategy*.						
6.b	**Foster a national 'peak body'**						
6.b.i	Establish a native seed 'peak body' (new or existing).						
6.b.ii	Authorise or 'licence' the 'peak body' to manage and promote the standard (1.1).						

Implementing preferred options over time

An implementation schedule for the *Strategy* activities is outlined in **Table 2**. Building momentum and strengthening networks is central to implementing the *Strategy*. If the sector focuses on only one activity or interest, this will reinforce the differences across the sector.

The upcoming release of the updated *FloraBank Guidelines*, ANPC *Germplasm Guidelines* and Project Phoenix project reports is an opportunity to address the challenge that is most commonly raised and shared across the sector: poor availability and access to information.

This links directly to *Strategy* activities 2.a.ii (regional events) and 2.b.ii (policy and planning sector summaries). These activities will create the platform for industry and government stakeholders to discuss, prioritise and co-design the other *Strategy* activities.

The native seed sector and government need to jointly decide how and when to implement and manage the *Strategy's* activities. We recommend this starts with a stakeholder forum (*Strategy* activity 6.a.i) to establish the guiding principles that will be used to transition the current leadership of Project Phoenix to a *Strategy* implementation partnership in 2022.

In developing the partnership, the key considerations are to assign a leader and working group members for each Strategic Objective. This needs the leadership group to expand beyond Project Phoenix's External Steering Committee to ensure the leadership group has the appropriate skills and representative members of the sector.

Participation also depends on leaders being able to contribute their own resources. It is essential that Traditional Owners are represented on this leadership group.

Successful implementation of the *Strategy* depends on awareness and promotional campaigns.

Evaluating the *Strategy*

Table 3 provides the time frame for monitoring the *Strategy's* progress against the KPIs for the Strategic Objectives and major activities. Evaluation is an important tool for understanding how well the *Strategy* is being delivered and is performing.

There is an opportunity for three main evaluations over the life of the *Strategy*. These include:

- **Post-commencement evaluation** — This would take place in years 1–2 of the *Strategy* and assess whether or not the *Strategy* was implemented successfully, and what lessons can be learned from the process. The findings would identify what is and is not working well, the barriers and enablers to the success of the *Strategy*, and whether the *Strategy* is on track to achieve its Strategic Objectives.
- **Mid-term outcomes evaluation** — This would take place in year 5 of the *Strategy* and would assess how well the *Strategy* has performed against the Strategic Objectives and KPIs. This would consider the purpose of the *Strategy*, the available resources, the activities that have been conducted, the reach of the *Strategy* across the sector, how appropriate the *Strategy* is (how well the activities meet the sector's needs), and whether it occurred on time and was efficient (the available resources have been used to produce the most valued outcomes at the lowest costs) and effective (the *Strategy* has made a difference aligned to the Strategic Objectives). This also considers whether the *Strategy* was equitable in meeting the needs of different groups.
- **Final outcomes evaluation** — This would take place in year 11 of the *Strategy*. It would be similar to the mid-term outcomes evaluation, yet assess the full life of the *Strategy*.

TABLE 2. IMPLEMENTING PREFERRED OPTIONS OVER TIME (DARK GREEN INDICATES COMPLETION, LIGHT GREEN INDICATES PREPARATION TIME)

YEARS	0.5	1	1.5	2	2.5	3	3.5	4+
STRATEGIC OBJECTIVE 1: QUALITY To agree on, promote and actively adopt one 'living' set of national best practice standards (or Code of Practice) for (voluntary) use across the sector								
1.a Develop a single nationally agreed framework for standards.								
1.a.i Adopt an existing framework(s) for standards.								
1.2 Find an owner for the standards, ideally independent and with existing processes and systems, to maintain and further develop the standards.								
1.b.i Enable an existing independent body to govern the standards.								
1.c Promote the benefits of using standards to larger seed suppliers and seed purchasers.								
1.c.ii Develop schedules for governments and large seed purchasers to readily incorporate the standards into their contracts.								
STRATEGIC OBJECTIVE 2: MARKET COORDINATION To enable the native seed sector to make coordinated market decisions by better sharing market-based information and connecting organisations and networks								
2.a Hold an annual forum where participants from across the sector and the supply chain can network and discuss sector issues.								
2.a.ii A series of state-based or regional events held at the same time each year in each state/region so as to enable participants from across the sector and the value chain to network and discuss sector issues.								
2.b Develop a 'policy and planning sector summary' and build a dynamic spatial mapping database of upcoming projects (infrastructure builds and landscape management).								
2.b.ii Work with federal and state/territory governments to get the required information to build a database.								
2.c Design a networked exchange portal with a brokerage function to support sharing of demand- and/or supply-side information.								
2.c.iii Develop a single exchange that works for both the demand and supply sides of the market.								
2.d Identify and engage potential users of native seed to build a broader demand base.								
2.d.i Develop and implement an awareness campaign to increase the number of buyers of native seed and quantum purchased.								
2.e Work with native seed practitioners to build their capacity and capability to record and provide information.								
2.e.i Work with native seed practitioners to improve the collection of native seed collection data.								

YEARS	0.5	1	1.5	2	2.5	3	3.5	4+
STRATEGIC OBJECTIVE 3: INFORMATION SHARING To support the native seed sector through access to new and existing knowledge, that is freely available, accessible and applied to support practices								
3.a Develop a single connected network of information databases on areas relevant to native seed — a 'one-stop-shop' approach.								
3.a.i A multipurpose connected network of existing online databases.								
3.b Develop and adopt an outcomes-focused and collaborative R&D framework with priorities for the native seed sector.								
3.b.i Use existing structures and funding to develop and deliver practical outcomes on R&D priorities that are co-designed across the sector.								
3.c Strengthen the range and quality of education and training provided, including strengthening Traditional Owner capacity and knowledge transfer.								
3.c.i Build the reach of existing education providers and work with Traditional Owners, schools, nurseries and councils to extend existing education materials.								
3.d Work with Traditional Owners to co-design the adoption and extension of existing protocols for engaging in services with local Traditional Owners.								
3.d.i Adopt and extend existing protocols for how Traditional Owners and those seeking to work with Traditional Owners should develop engagement arrangements.								
STRATEGIC OBJECTIVE 4: NEW INDUSTRIES To foster the growth of new and emerging industries to increase economic activity								
4.a Ensure sector participants have access to industry development funding, knowledge and support through existing mechanisms.								
4.a.iii Leverage AgriFutures Emerging Industries Program and use the information compiled in 2.2.								
4.b Develop new industries through better coordination and collaboration across sector participants (2.1 and 3.1).								
STRATEGIC OBJECTIVE 5: SMARTER REGULATION To better protect threatened species, biodiversity and land tenure while improving access (supply) through smarter regulation								
5. Conduct a cross-jurisdictional good practice review of licensing and permits relating to native seed collection across all states and territories.								
STRATEGIC OBJECTIVE 6: SECTOR LEADERSHIP To develop a single voice for coordinated action in the native seed sector to ensure strategic leadership and foster future growth and development of the sector								
6.a Establish a joint industry-government coalition to oversee the *Strategy*.								
6.a.ii Develop a partnership agreement to implement the *Strategy*.								
6.b Foster a national member-based 'peak body'.								

TABLE 3. TIME FRAME FOR ACHIEVING THE STRATEGIC OBJECTIVES AND KPIS

YEAR	1	2	3	4	5	6	7	8	9	10
STRATEGIC OBJECTIVE 1:QUALITY To agree on, promote and actively adopt one 'living' set of national best practice standards (or Code of Practice) for (voluntary) use across the sector										
1–2 years:										
A 'living' minimum standard, based on a best practice framework(s), is identified and adopted.										
An owner for the standards is found and national promotion begins with the sector and with government and large seed purchasers.										
3 years:										
75 per cent of large seed purchasers use the standards as part of their contracting arrangements.										
50 per cent of seed suppliers have adopted the standards.										
The standard is evaluated, reviewed and adapted in line with findings and new information (in year 3).										
5–10 years:										
100 per cent of large seed purchasers use the standards as part of their contracting arrangements.										
75 per cent of seed suppliers have adopted the standards.										
The standard is evaluated, reviewed and adapted in line with findings and new information (in years 6 and 9).										
Quality of the seeds bought and sold improves due to improved buyer awareness driving quality standards.										
Quality of restoration outcomes increases due to better lesson sharing and improved seed quality.										
Quality of seed banking and viability in longer-term storage improves due to better knowledge development and information sharing.										
STRATEGIC OBJECTIVE 2: MARKET COORDINATION To enable the native seed sector to make coordinated market decisions by better sharing market-based information and connecting organisations and networks										
1 year:										
Planning for the inaugural annual forum commences.										
Regional coordination networks are fostered and supported.										
Work has begun on a 'state of the sector'/'policy and planning sector summary' for demand-side information.										
Work has begun to inform educate buyers of seed.										
Work has begun on a universal database and an exchange portal for information sharing.										
Work has begun to identify current niche buyers and new potential buyers of native seed for expansion.										

YEAR	1	2	3	4	5	6	7	8	9	10
2 years:										
The inaugural annual forum is held.										
Awareness campaign is delivered.										
Policy, program and permit/licensing decisions are better informed.										
3 years:										
Infrastructure, services and resources are better shared/accessed.										
Quality of the seeds bought and sold improves due to better buyer awareness driving higher quality standards.										
Policy, program and permit/licensing decisions are better informed.										
Sector participants understand how the sector is positioned within the broader policy system (i.e. climate, agriculture, emergency response).										
The native seed sector is more aware of relevant issues and has a better coordinated voice and action.										
Native seed is purchased by a broader range of buyers.										
5–10 years:										
Achieve more progress on the 3 year KPIs.										
STRATEGIC OBJECTIVE 3: INFORMATION SHARING To support the native seed sector through access to new and existing knowledge, that is freely available, accessible and applied to support practices										
1 year:										
Develop and promote existing online regional native species and distribution guides.										
An online database is established.										
Native seed sector participants leverage opportunities to secure R&D funding from existing models.										
The 'peak body' engages with the sector to develop R&D priorities.										
The 'peak body' engages with the sector to identify existing education and training programs that can be expanded and any gaps where new programs should be developed.										
A culturally appropriate protocol is developed to guide engagement between Traditional Owners and those seeking to work with Traditional Owners.										

YEAR	1	2	3	4	5	6	7	8	9	10
3 years:										
The online database is updated and used by native seed sector participants.										
Native seed sector participants can meet face-to-face at an annual forum.										
Intended R&D outcomes, priorities and activities are identified by the native seed sector.										
Cross-sectoral R&D partnerships are established based on intended R&D outcomes.										
Annual sector summaries (policy, R&D, funding, training, etc.) are published.										
Traditional Owners are better engaged and remunerated for sharing knowledge and access to Country.										
Traditional Owner knowledge is respectfully represented in training, including the understanding of traditional seed management and why methods are specific to native seed.										
5–10 years:										
Better availability of information drives more informed R&D priorities. This includes monitoring progress towards and updating R&D outcomes over time.										
R&D is better coordinated and it becomes less common for areas of the sector to operate in silos.										
R&D is delivered according to the sector's intended outcomes.										
Knowledge is built on seed banking techniques, seed ecology, germination, taxonomic, genetics and the impacts of climate change.										
Skills, education and training are more accessible and transferred, which builds the capacity of the sector and retains and attracts new employees.										
The native seed sector is more aware of relevant issues and has a more coordinated voice and action.										
Existing education programs are expanded to meet the demand for education.										
Education gaps are filled by building on existing programs or developing new programs.										
Traditional Owners are better engaged and remunerated for sharing knowledge and access to land.										
Traditional Owner knowledge is respectfully represented in training, including the understanding of traditional seed management and why methods are specific to native seed.										

YEAR	1	2	3	4	5	6	7	8	9	10
STRATEGIC OBJECTIVE 4: NEW INDUSTRIES To foster the growth of new and emerging industries to increase economic activity										
1 year:										
The online database stores information on the availability of resources (infrastructure, funding etc.), skills, knowledge etc.										
Establish and support regional coordination in identified priority locations.										
2 years:										
Sector participants developing new and emerging industries have access information and resources.										
Sector participants form partnerships to develop new and emerging industries.										
Sector participants increasingly use existing support programs.										
Existing support programs receive more applications and requests related to native seed/plants/products.										
6–10 years:										
Opportunities to develop new industries are better explored.										
More native seed/plants/products industries are supported by existing support programs.										
The scale and number of industries related to native seed increases.										
STRATEGIC OBJECTIVE 5: SMARTER REGULATION To better protect threatened species, biodiversity and land tenure while improving access (supply) through smarter regulation										
1 year:										
A good practice review of the licensing/permits in the sector under the *EPBC Act 1999* is conducted.										
Areas of reform are identified.										
2 years:										
Reviews at a state and territory level (or where devolved to local government, at a local government level) occur on cost recovery, compliance and delivery of licences/permits.										
Improved information collection to inform permit/licensing agencies.										
3 years:										
A set of national principles/guidelines to inform the jurisdictional regulation are developed.										

YEAR	1	2	3	4	5	6	7	8	9	10
5–10 years:										
Reforms are implemented across jurisdictions (based on sector outcomes) guided by national principles.										
There is less burden on seed collectors and the government, in terms of cost and time taken to apply for, comply with, report against and monitor compliance with licences/permits.										
There is consistency across jurisdictions in terms of costs and processes.										
There is better awareness of licensing/permit requirements.										
Seed collectors find it easier to work across jurisdictions.										
There is better access to and protection of land and species and more secure supply.										
STRATEGIC OBJECTIVE 6: SECTOR LEADERSHIP To develop a single voice for coordinated action in the native seed sector to ensure strategic leadership and foster future growth and development of the sector										
1 year:										
Strategy leadership group agreed and operating.										
2 years:										
Peak industry body active.										
3 years:										
Review the *Strategy* and leadership needs of the sector.										
5–10 years:										
The sector is more aware of relevant issues and has a more coordinated voice and agenda for action.										

APPENDIX A: PROJECT PHOENIX REPORTS AND ALIGNMENT OF THE STRATEGIC OBJECTIVES

TABLE A.1. RELATIONSHIP BETWEEN STRATEGIC OBJECTIVES AND THE BROADER PROJECT PHOENIX REPORTS

PROJECT PHOENIX REPORTS	QUALITY	MARKET COORDINATION	INFORMATION AND KNOWLEDGE	NEW INDUSTRIES	SMARTER REGULATION	SECTOR LEADERSHIP
Bushfire impacts — ArcGIS resources		√	√		√	
Bushfire impacts — How much seed will I need?	√	√	√			
Bushfire impacts — How much seed will I need?	√	√	√		√	
Bushfire impacts — Where will the seed come from?	√	√	√		√	
Snap! A picture of the Australian Seed Sector in 2021	√	√	√	√	√	√
Join the National Seed Network!	√	√	√			
Revealed! The National Native Nursery Network	√	√	√	√		
Australian native seed production in 2021	√	√	√	√	√	
Psst... Everything you wanted to know about native seed licensing		√	√		√	
Everything you wanted to know about access to land for native seed collection		√	√		√	
Do we need a National Seed Code of Practice?	√					√
Making Tracks — Where does seed come from and where does it go?		√	√			
Applied research — Communities of practice, people and science			√			
Native Seed Transfer Zones in Australia — How far can seed go?	√	√	√		√	
How does the native seed market work?	√	√	√	√	√	
How much does native seed cost?	√	√	√			
International options to incentivise the Native Seed Sector			√		√	√
Successful international restoration systems	√	√	√		√	
The big reveal — Introducing the new FloraBank website	√	√	√		√	
In the field and lab with Threatened Species Managers	√	√	√			√
What are conservation seed banks and what do they do?	√	√	√			
Native Seed Training in 2021	√	√	√			√
New FloraBank training for the Native Seed Sector	√	√	√			
Indigenous communities — Opportunities for native seed training			√			√

APPENDIX B: STAKEHOLDER ORGANISATIONS CONSULTED

The organisations consulted as part of the *Strategy* 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 of Australia Limited
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, QLD
19. Bush Heritage
20. Cape Life
21. Cardinia Environment Coalition
22. City of Cockburn, WA
23. City of Salisbury, SA
24. Commonwealth Department of Agriculture, Water and the Environment
25. South Australian Department of Environment and Water
26. Commonwealth Scientific and Industrial Research Organisation
27. Conservation Volunteers Australia

28. Corangamite Catchment Management Authority, VIC
29. Corporate Carbon Advisory
30. Currockbilly Mountain Nursery
31. Dana Kelly Consulting
32. Ecology and Heritage Partners
33. EConPlan
34. Ecotypic Pty Ltd
35. Australian Capital Territory Planning and Land Authority, Environment and Planning Directorate
36. Envirotech
37. Euroa Arboretum
38. Field's Environmental Solutions
39. Fitzroy Basin Association, VIC
40. Foundation for National Parks and Wildlife
41. Future Harvest Native Revegetation Services
42. GHEMS Revegetation environmental
43. Glenelg Hopkins Catchment Management Authority, VIC
44. Goulburn Broken Catchment Management Authority, VIC
45. Green Blue Health
46. Greening Australia Limited
47. Harvest Seeds & Native Plants
48. Kalbar Operations
49. Katanning Landcare
50. Ken Davies Seed
51. Landcare Australia
52. Landcare Illawarra
53. Main Roads WA
54. Mallee Conservation
55. Murray Local Land Services
56. Murrumbateman Landcare Group, NSW
57. Native Seeds Pty Ltd
58. Native Soda
59. NaturalCapital Pty Ltd
60. Nindethana Seed Service

61. Ningee Bush Foods
62. North Coast Local Land Services
63. NSW Biodiversity Conservation Trust
64. NSW Department of Planning, Industry and Environment
65. NSW Department of Primary Industries
66. NSW National Parks and Wildlife Service
67. Oil Advantage
68. Penrith City, NSW
69. Pilbara Native Seeds Co Pty Ltd
70. Plantrite
71. Queensland Department of Aboriginal and Torres Strait Islander Partnerships
72. Queensland Trust for Nature
73. Rainforest Bounty
74. Regional Development Australia ACT
75. Riverina Revegetation formerly Coleambally Saltbush
76. Royal Botanic Gardens and Domain Trust, NSW
77. Royal Botanic Gardens Victoria
78. Rural and Remote Development
79. Seed Shed
80. Seeding Victoria
81. Seedtree Maps
82. Seedworld Australia
83. South Coast Native Seeds
84. Stanwell, QLD
85. Stringybark Ecological
86. Sustainable Timber Tasmania
87. Swainsona Seed Services
88. Tasmanian Department of Primary Industries, Parks, Water and Environment
89. Terralogica Seeds
90. The Backyard Garden Enthusiast
91. The Revegetation Industry Association of WA
92. Threatened Species Conservancy
93. Top End Seeds
94. Transport for New South Wales

95. Trillion Trees
96. University of Queensland
97. University of Sydney
98. University of Tasmania
99. University of Western Australia
100. Upper Murrumbidgee Landcare, NSW
101. Verterra
102. Victoria Volcanic Plain Biosphere
103. Victorian Department of Environment, Land, Water and Planning
104. Vitroflora
105. WA Department of Primary Industries and Regional Development
106. Wagga Wagga City Council, NSW
107. Western Australian Biodiversity Science Institute
108. Wheatbelt Natural Resource Management Inc
109. Yass Area Network of Landcare Groups.

APPENDIX C: RANGING INTERVIEW KEY THEMES

Ranging interviews were conducted in April and May 2021 to identify the *Strategy* themes that need to be explored, establish the sign-off process and responsibility for the *Strategy* and identify additional stakeholders to be consulted.

The findings from the ranging interviews are presented below according to the key themes:

- *Strategy* framing
- native seed sector participants
- supply and demand issues
- quality
- legislation and regulation
- *Strategy* governance.

C.1 *Strategy* framing

- Stakeholders considered that the role of the *Strategy* should be to:
  - drive state and territory policies on seeding, targets, procurement and selection of species
  - explore issues such as climate-adjusted adaptation, management of threatened species and maintaining biodiversity
  - link with existing policies and programs, such as the Healthy Seeds initiative by the NSW Government
  - provide information and education on relevant regulations
  - advise on R&D priorities for the native seed sector.
- The *Strategy* should use a mission based structure, that presents challenges and objectives for the native seed sector.
  - The *Strategy* should set ambitious goals.
  - The *Strategy* should consider natural heritage, culture and tourism.
- Five pillars were identified ahead of consultation and included in the ranging interview discussion guide. These include information provision, smarter regulation, capacity building, quality and standards, and research and development. In general, stakeholders:
  - found the pillars to be broadly appropriate
  - indicated that the pillars are interconnected.

- The *Strategy* should be accompanied by:
  - awareness and promotional campaigns to support its implementation and
  - monitoring and evaluation processes to understand its impact.

C.2 Native seed sector participants

- There was a consensus among most stakeholders that seed banks need to be strengthened through:
  - increased government funding
  - improved consistency of funding — seed banks require long-term contracts and funding certainty
  - improved trade and coordination across seed banks
  - the development of commercial income streams (although this was highlighted as a challenging area to explore due to government restrictions on selling certain species or species collected from certain areas).
- Traditional Owners are an essential stakeholder group, and several native seed organisations operate in some jurisdictions
  - Stakeholders considered it important to protect Traditional Owner intellectual property and land access, and provide appropriate remuneration.
- Government responsibilities for native seed and their use is distributed across local, state and territory and Commonwealth governments (Catchment Management Authorities/Local Land Services and Natural Resource Management regions), and across multiple agencies/departments.
  - Stakeholders suggested that better coordination is needed across state, territory and Commonwealth Governments and relevant Ministers.
  - The states and territories have different requirements for the volume and purpose of native seed:
    - Victoria is reviewing the revegetation sector, and is considering climate-adjusted provenance.
    - NSW is delivering the Healthy Seeds project, which will deliver an evidence-based road map to secure native seed supply in NSW for restoration, and to update the *FloraBank Guidelines* for best practice native seed collection and use.
    - The ACT does not engage in much rehabilitation using native seed as it is expensive, and has variable success rates (due to poor knowledge/protocols on how to support germination).
    - In Queensland, a large amount of restoration occurs through NRM/Landscape Region vehicles. It is challenging to achieve successful restoration due to the climatic conditions.

- In Western Australia, limitations to sector growth include poor access to land/seed due to restrictive regulations.
- In Tasmania, natural regeneration is effective and there is low demand for regeneration from mining.

C.3 Supply and demand issues

- Challenges affecting the native seed sector include:
  - uncoordinated and poorly understood demand from government and to a lesser extent the private sector
  - supply constraints resulting from challenges sourcing seed, and poor and delayed information on buyer requirements
  - poor seed quality
  - the impact of the climate change on species adaptation and stockpiles of seed
  - securing appropriate remuneration for private/Traditional Owner lands
  - distributing funding to smaller organisations/businesses
  - securing funding outside of government provisions (i.e. mining groups).
- Some stakeholders considered that if seed was available at a higher quality, then it would be required in smaller quantities.
- A marketplace was considered useful in creating transparency on supply and demand and connecting buyers and sellers of seed.
- Some stakeholders considered that quality standards were necessary and needed to be mandatory/enforced.

C.4 Quality

- Most stakeholders considered that the native seed sector would benefit from consistent and harmonised national standards on quality, ethics and sustainability. This was seen to be important for:
  - facilitating buying and selling of seed through a marketplace and
  - improving biodiversity, revegetation and conservation outcomes.
- However, quality control is expensive and there needs to be a willingness among buyers to pay for the increased cost of seed.
  - Buyers need to be made more aware of the importance of quality seed and the value this will contribute to planting outcomes.
- There are several existing quality standards (e.g. *FloraBank Guidelines*, Revegetation Industry Association of WA (RIAWA), Australian Seed Federation), yet none are universally adopted across the native seed sector.

C.5 Legislation and regulation

- Legislation has not been harmonised across jurisdictions. Each state and territory and the Commonwealth Government has a range of legislation and regulations that control land access.
- Changing legislation is expensive and time-consuming and needs to be conducted separately in each jurisdiction.
- Most stakeholders suggested that regulations governing land access were unclear and overly complex and restrictive to seed collection practices.
  - Industry stakeholders reported significant difficulty in accessing information about land ownership and permissions.
  - Regulations differ by state, making it challenging and burdensome to collect across state and territory borders.
  - As a consequence, there was widespread reporting of poor practice with regard to land access.
  - Regulation and legislation need to balance appropriate control of land access and protection of threatened species, without being overly burdensome and providing a disincentive to collection.

C.6 *Strategy* governance

- Stakeholders had divergent views on who should 'own' the *Strategy*. Some stakeholders thought it should be owned by the Commonwealth Government, while others considered that consortium, industry or an industry peak body should 'own' the *Strategy*.
- The industry group RIAWA is an example of self-regulation in the sector, and has led to better networks and coordination. However, its voluntary nature limits membership.

APPENDIX D: WORKSHOP SUMMARY REPORT

The purpose of this document is to provide a high-level summary of the key themes emerging from the 11 *Strategy* design workshops held in April. The workshops were:

- Capacity
- Supply
- Demand
- Conservation
- R&D
- National (four workshops)
- WA
- NSW
- VIC
- QLD
- SA/TAS/NT/ACT.

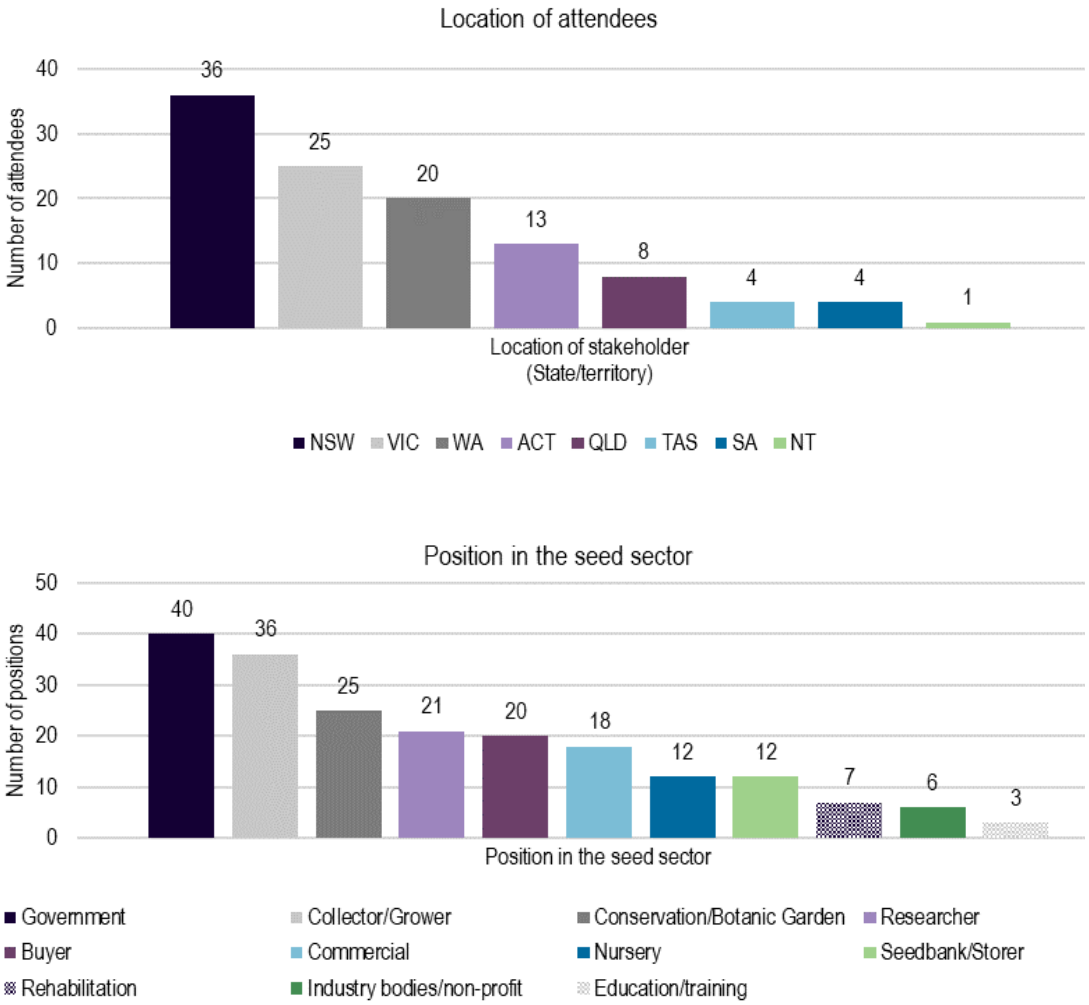
This document presents a synthesis of the main issues across all workshops, followed by individual summaries for each workshop that identify unique issues, as relevant.

D.1 Attendees

The workshop attendees are overviewed in **Figure D.1** according to location (top graph), workshop (middle graph) and position in the seed sector (bottom graph). Across the workshops:

- A total of 111 unique stakeholders attended the workshops, with 231 total attendees.
- Most attendees were from NSW, then VIC and WA.
- The R&D, then Conservation and Supply workshops had the largest number of attendees.
- Most attendees were from government or collector/grower positions, followed by conservation/botanic gardens, research and buyers.

FIGURE D.1. WORKSHOP ATTENDEES BY LOCATION, WORKSHOP AND POSITION IN THE SEED SECTOR



Note: some stakeholders attended more than one workshop, so the number of total attendees is greater than the number of unique attendees.
Position in the seed sector assigned based on registrant data. Some registrants identified more than one position in the seed sector. As such, the number of positions is more than the number of attendees.
Source: ACIL Allen, contentgroup

D.2 Summary of common themes

A summary is provided below according to the key workshop topics.

D.2.1 The challenges

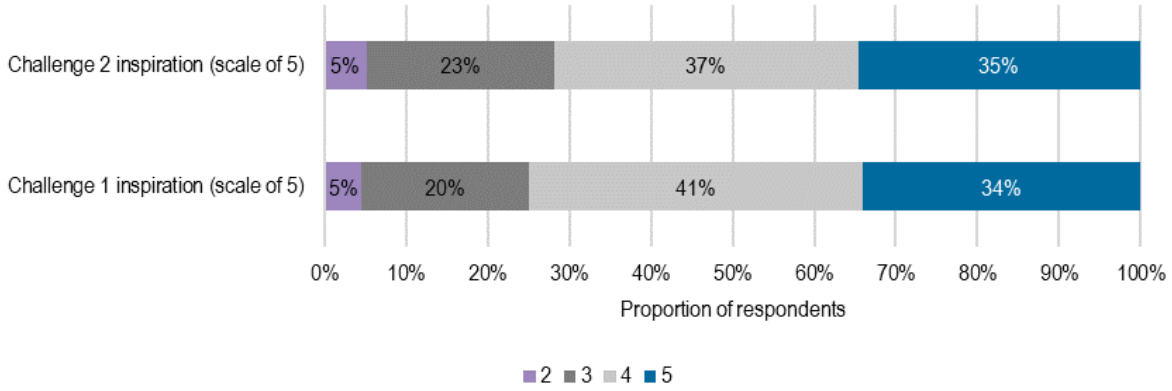
Challenge 1: Seed banks continue to make the full diversity of Australian native plant species and their genetics available for posterity and active use.

Challenge 2: The Australian native seed sector attracts the resources to sustain its skills and capacity to respond when required.

- The challenges are broadly accepted.
- Cross-cutting goals were seen as important for building the whole sector. This will build coordination, consistency, reliability and value.
- Some considered that ten years was the minimum length the *Strategy* should aim for — in practice the sector is very long-term.
- The sector should aim high. There is great potential to add value to the economy (e.g. the US native seed sector is valued at $2 billion).
- Some issues with the challenges:
  - achieving the challenges will take baseline funding
  - the notion of sustainability is challenging given that the sector faces many fluctuations
  - conservation of threatened species needs to balance revegetation to achieve better conservation outcomes
  - 'seed banks continue to make' was seen as an issue by some, as they did not perceive that seed banks were currently making 'the full diversity' available
  - 'seed banks' needs to be defined as inclusive of in situ and ex situ seed
  - 'genetics' need to capture genetic viability, fitness, diversity/provenance and
  - the challenges do not include plant types that do not set seed (these are fundamental to landscapes).

Figure D.2 provides a summary of the poll results on the Challenges across all workshops. This shows that most respondents identified that both Challenge 1 and 2 were inspirational (72 and 75 per cent respectively identified 4 and 5 out of 5).

FIGURE D.2. SUMMARY POLL RESULTS: CHALLENGES



Number of respondents: 88 and 78 for Challenges 1 and 2 respectively.
Out of 5, how much does challenge 1 and 2 inspire you to develop the native seed sector? (1 being 'not at all' and 5 being 'a lot')
Source: ACIL Allen, contentgroup

D.2.2 Five pillars

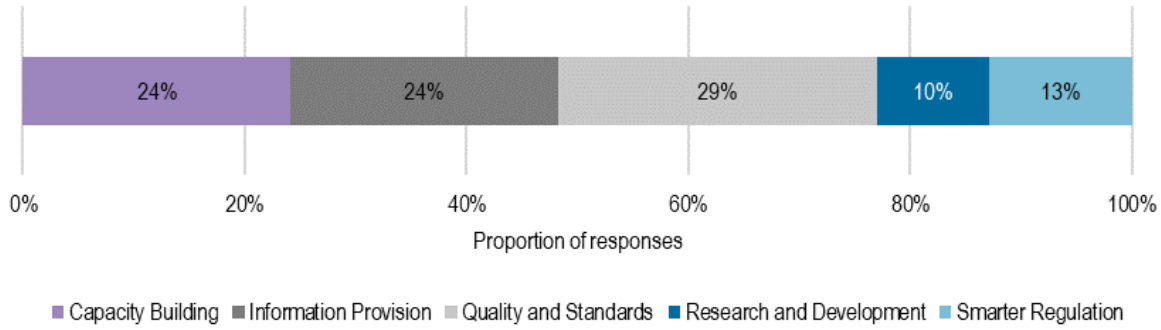
Pillars: Information Provision, Capacity Building, Quality and Standards, Research and Development, Smarter Regulation.

The pillars work together and all are important in driving the growth of the sector. Themes cut across the pillars.

Figure D.3 provides a summary of the poll results on the pillars across all workshops. In general, most considered that the pillars with the greatest potential to contribute to the growth of the sector are:

- quality and standards and
- information provision and capacity building.

FIGURE D.3. SUMMARY POLL RESULTS: PILLARS

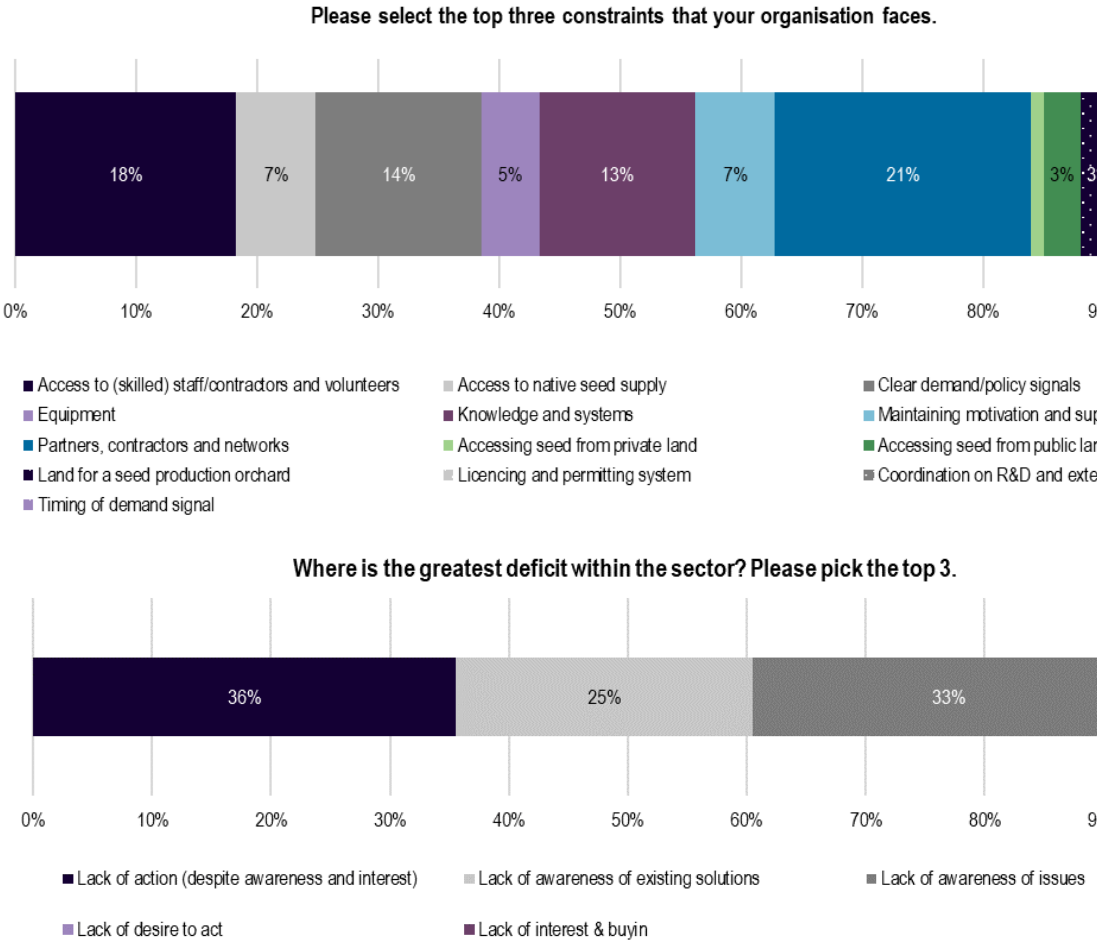


Number of responses: 170 (respondents could select up to three pillars).
Please pick the three pillars that have the highest potential to develop the native seed sector.
Source: ACIL Allen, contentgroup

Figure D.4 shows the top three constraints (top graph)/deficits (bottom graph) in the sector. These are:

- **Constraints:** partners and networks, access to (skilled) staff and volunteers and knowledge and systems.
- **Deficits:** lack of awareness of issues, lack of action (despite there being awareness and interest), and lack of awareness of existing solutions.

FIGURE D.4. TOP THREE CONSTRAINTS AND DEFICITS IN THE SECTOR



Number of responses: 487 (respondents could select up to three constraints). Please select the top three constraints that your organisation faces.
Number of responses: 76 (respondents could select up to three deficits). Where is the greatest deficit within the sector? Please pick the top 3.
Source: ACIL Allen, contentgroup

D.2.3 Quality/Code of Practice

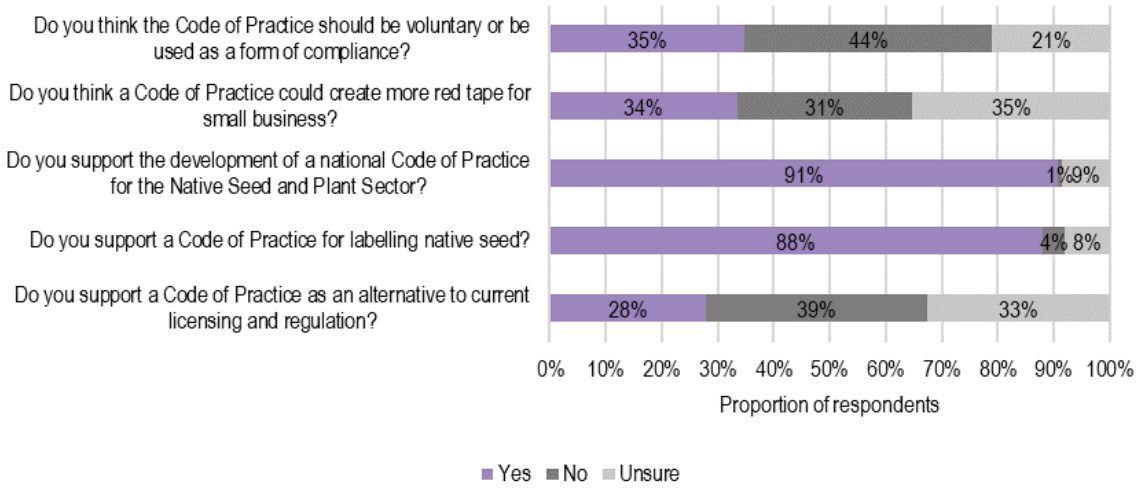
- Some see a Code of Practice (CoP) as a natural next step while others are hesitant. Possibly this is due to confusion about what this involves.
- There are challenges with standardising such a diverse and complex market.
- Quality is driven by both supply and demand side (suppliers and buyers):
  - assurance of quality is happening in some transactions now
  - there is a need to overcome poor practices and support better behaviour. CoP will not be a barrier to those with good practices.
- There may be a need for different levels of standards:
  - mandatory minimum standards for labelling (e.g. species, location) — standards should give people information to make an informed decision
  - voluntary additional information above the minimum standards, which may be used as a competitive edge (e.g. GPS location, viability, storage, provenance, ethical collection)
    - this requires a tracking system.
- Mandatory standards would need to involve a transition period:
  - needs to consider the burden/risk for small-scale suppliers and non-profits, relative to large-scale and commercial suppliers — this should not exclude sector participants
  - this could just be used for those involved in commercial buying and selling
  - can be used as a compliance system.
- Buyers need to be aware (education and training, buyer's guide) of the importance of quality and start to set a clear expectations/specifications for sellers to meet:
  - if buyers demand quality, suppliers will meet it
  - there needs to be a willingness to pay for the additional costs that will be incurred.
- Coordination:
  - needs to have a designated coordinator
  - differing views on the level of coordination: national, state and regional
  - should include NRM/Landscape Regions regional vegetation guides (e.g. physical landscape, topography, key species).
- Good work has already done in this space. This should be consolidated and leveraged:
  - FloraBank/ANPC is currently developing guidelines and seeking feedback — these can be adopted more widely. A separate 'buyer's guide' was seen to be useful.
  - BHP manual on quality standards

- Queensland Roads and the Queensland *Biodiscovery Act*, which limits how entities collect and access biological materials, including seed. It has a code of ethics and requires consideration of, and agreement by Traditional Owners.
- Australian Seed Federation: as a member you must comply with the Codes of Practice. This has a section on native seed. FloraBank is not included, but could be (there is an upcoming practice review in August). It does not apply to seed banks in the conservation space, only commercial.
- *Nursery Industry Accreditation Scheme Australia (NIASA) Guidelines*
- Revegetation Industry Association of Western Australia (RIAWA) has Seed Standards and an Accreditation for accrediting native plant seed that is bought and sold in WA.[47]

Figure D.5 provides a summary of the poll results on the CoP across all workshops. This shows:

- the CoP should be national and focus on labelling
- respondents are evenly split on whether the CoP should be voluntary/a form of compliance, would create more red tape for small business, should be an alternative to current licensing/regulation.

FIGURE D.5. SUMMARY POLL RESULTS: CODES OF PRACTICE



Number of responses (top to bottom, respectively): 138,138, 129, 84, 104.
Source: ACIL Allen, contentgroup

[47] http://riawa.com.au/wordpress/?page_id=1059

D.2.4 Governance

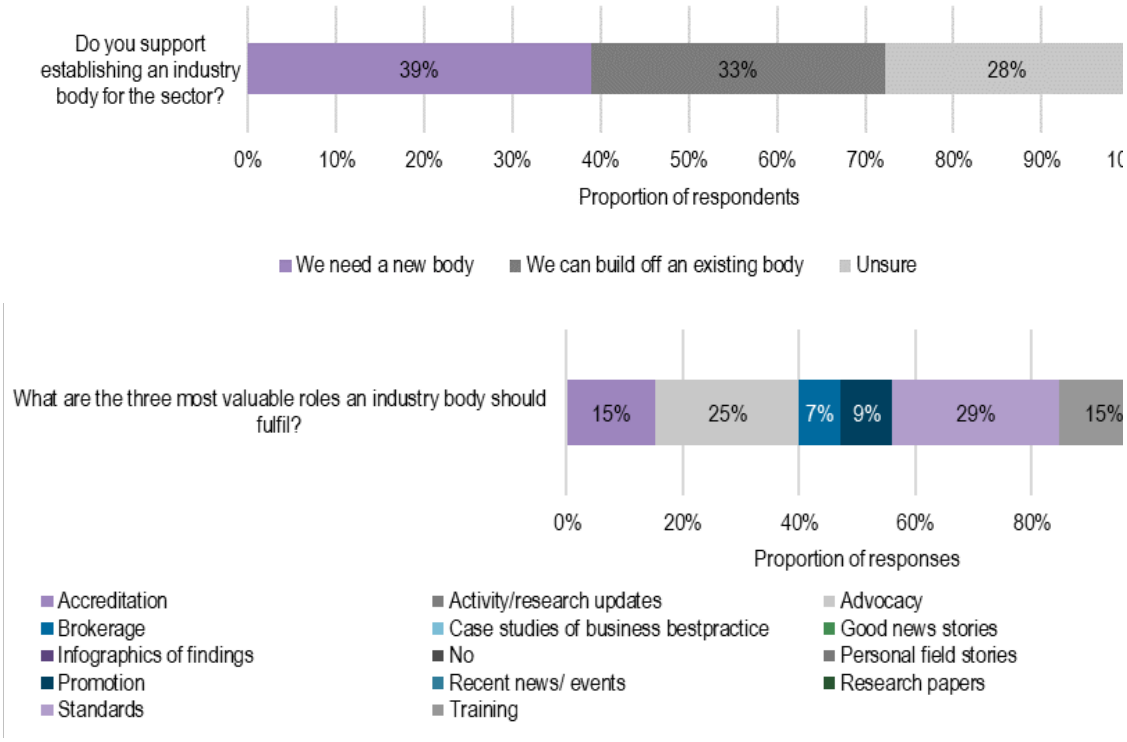
- There was consensus that the sector needed a coordinating industry body that should:
  - advocate to government to guide decision makers and policy
  - attract government grants targeted to the sector
  - coordinate information on supply and demand (and work for both buyers and sellers)
  - oversee R&D
  - stimulate engagement/collaboration
  - enable businesses
  - be financed, initially, by government until the sector is mature enough to be self-sustaining
  - support newcomers to the sector
  - consider common issues, such as threatened species movement and climate-adjusted translocation.
- The *Strategy* must involve Traditional Owners.
- There were different perspectives on who should govern the *Strategy* and whether an existing entity could perform the governance role. The general consensus was that this should be led by a cross-sectoral consortia, involving industry, government, not-for-profits etc.
- Participants suggested the following existing entities that could perform this role:
  - Commonwealth Department of Agriculture, Water and Environment (DAWE)
  - AgriFutures emerging markets
  - Australian Seed Bank Partnership
  - Australian Seed Federation (funded by DAWE)
  - Australian Network for Plant Conservation
  - CSIRO (may be too research-focused)
  - NRM/Landscape Regions (scope may not be broad enough as they are mainly agricultural)
  - Landcare (but have unstable funding)
  - Society for Ecological Restoration Australasia (SERA)
  - RIAWA
  - Australian Association of Bush Regenerators (AABR).

- Knowledge sharing consortia
  - there is a need for a centralised database of buyers/sellers, capacity, time frames, transactions, viability, purpose of seed purchase, location of seed
  - there are intellectual property concerns (sharing information on the location of seed collection)
  - there is a need for a dedicated 'knowledge aggregator' — otherwise this will not happen in a timely manner. This should be a paid position.

Figure D.6 provides a summary of the poll results on governance across all workshops. This shows that:

- respondents were evenly split on the need for a new industry body, the ability to build from an existing body and being unsure
- the most valuable roles for the industry body includes standards, advocacy and accreditation.

FIGURE D.6. SUMMARY POLL RESULTS: GOVERNANCE



Number of respondents and responses (top to bottom, respectively): 67, 125.

Source: ACIL Allen, contentgroup

D.3 Capacity and networks

- There is limited capacity in the sector:
  - there is a need for a diverse range of training for different regional areas, participants (collectors, sellers and purchasers), policy and program makers, communities, Traditional Owners
  - some consider demand to be strong (from mining and construction) with supply capacity the constraint
  - others consider that unpredictable demand is limiting capacity building
  - there is a need for funding for capacity building: infrastructure, skills/training, testing, seed production areas (SPAs).
- Networks:
  - these are often regional and within agencies. There is not much cross-over between networks:
    - some considered there to be strong communication between botanic gardens
  - there is a need for more connected networks:
    - to connect seed suppliers with seed procurers
    - to share and communicate learnings, data, insights and to connect with others
    - that align with existing government or university run programs and networks
  - some considered that there was significant competition across the commercial part of the sector, with information sharing inhibited by the need to protect IP
  - there needs to be greater transparency so networks can more easily form
  - existing networks that could be leveraged:
    - RIAWA
    - National Environmental Science Program Hub
    - FloraBank/ANPC
    - Seed banks (which are essential coordinators of supply, demand and funding).
  - networks across the supply chain and personal commitment create sustainability (projects, funding availability, training programs).
- Training programs
  - poor/lack of training is leading to poor outcomes
  - training should be attached to CoPs
  - there are issues with the availability and affordability of specialised training courses and linkage of training for accreditation

- training can occur through TAFE, landcare groups, town hall meetings, universities, community groups, apprenticeships and mentorships
    - some larger-scale organisations operate in-house capacity building. Others outsource capacity when needed (but this results in quality issues).

- Traditional Owners — there is some ongoing capacity building, but need to engage more.

D.4 Supply

- There are supply constraints due to:
    - lack of collectors
    - inadequate storage
    - variable demand
    - complex system of permits/permissions/royalties
    - short lead times
    - over-collection
    - poor coordination/networks
    - provenance limitations
    - lack of mechanisation
    - unreliable/disaggregated spatial information
    - poor awareness of the industry — not incorporated in training and education
    - land clearing
    - negotiating with landowners
    - poor funding for and coordination of SPAs
    - variability of species, harvest times/quantity.
- Regulation has a significant impact on supply:
    - accreditation needs to balance the risk of over-regulation/burden. Currently, some collectors/suppliers are not complying with regulation because it is too difficult. It discourages collecting in certain areas.
    - consistency of regulation across public lands is an issue (QLD comment)
    - there is a need to train regulators.
- We can improve seed supply by:
    - improving information provision through a native seed marketplace — so suppliers understand what demand is and can respond accordingly
    - educating buyers on the lead time required to secure supply

- better understanding how to source seed from bushfire-affected areas
- encouraging government to fund annual collection to ensure security of supply.

- We can improve seed storage by:
  - collecting and storing larger amounts of seed and better coordinating resources and information across banks so that collectors do not need to collect every year
  - understanding and improving storage conditions to improve viability
  - building individual and connected or large scale infrastructure.
- Other considerations
  - genetic diversity: need to be careful of in-breeding and more collectors collecting within a provenance
  - use of technology to aid information provision, e.g. Epicollect. Clients are increasingly wanting GPS information.

D.5 Demand

- There is a need for a clear demand signal to secure supply (reduce the risk of establishing SPAs, provide certainty of funding/income):
  - some commercial participants indicated that there is strong demand, yet supply constraints.
- An online marketplace/hub and in-person events could support an understanding of total demand, provenance, quantity, species lists, skills, expertise, infrastructure. This should be filterable by species/location and leverage existing platforms:
  - RIAWA helps buyers and sellers by providing business locations and specialities
  - GA's seed supply system records plant information for direct seeding
  - https://evergreenconnect.com.au/ provides details on supply/availability and price
  - FloraBank
  - Australian Plant Society
  - *Atlas of Living Australia*
  - *Germplasm Guidelines*
  - Australian Seeds book
  - Botanic seed bank
  - conferences: Seed Science, Mine Closure, RIAWA.
- There is some willingness to share information to grow the sector (mostly conservation participants). The commercial sector is more cautious due to IP issues.
- Demand for threatened and climate-adjusted species will increase.

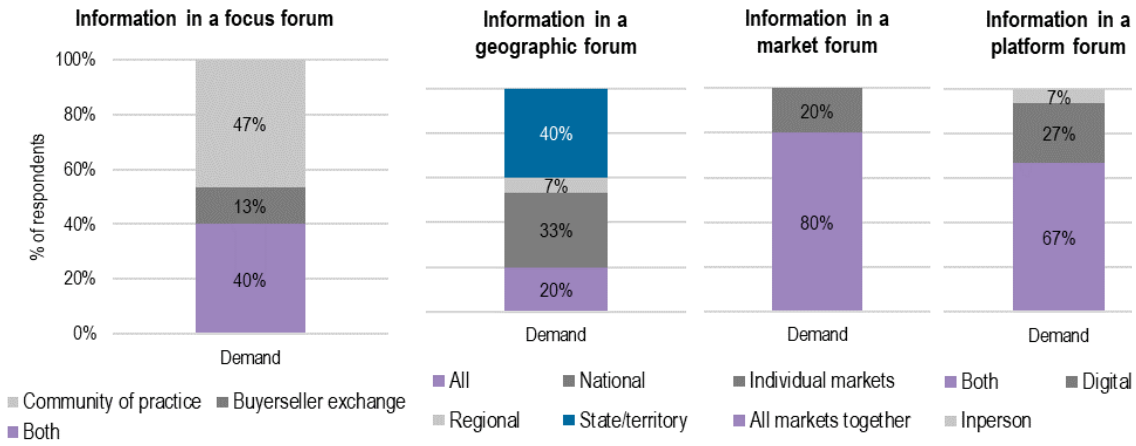
- There is a need to educate buyers and support users to correctly use seed. There is a large shortfall in knowledge and practice in the mining and rehabilitation sector:
  - seed demand needs to be built into contracting and forward planning
  - seed is being wasted due to poor implementation.
- Regulation has a significant impact on demand:
  - need for stronger enforcement of regulation for mining companies, planning and other revegetation buyers. The requirement for high-quality revegetation needs to be embedded in government contracts.
- There is a willingness of government (Transport for NSW) to pay some levy (by volume) to contribute to the growth of the industry. A standard project size is $100M, so there is a large potential to contribute to the industry:
  - an industry body would need to oversee the levies.

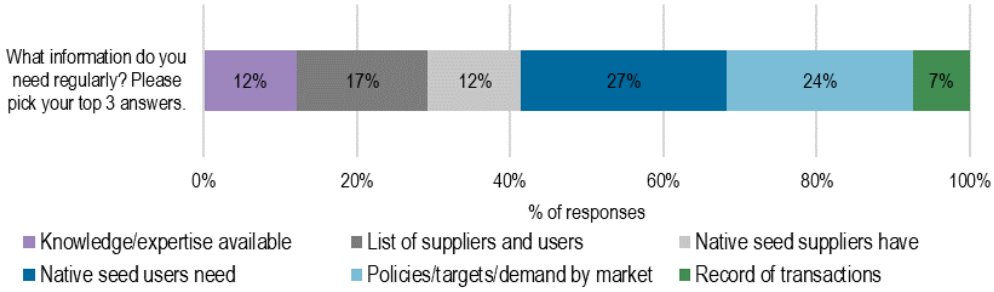
Figure D.7 provides a summary of the poll results for the Demand workshop. This shows that most respondents want information to be provided:

- through a buyer-seller exchange and a community of practice
- according to regions and national
- on all markets together
- both in person/online and in person only.

The greatest information needs were for native seed users' needs and policies/targets/demand by market.

FIGURE D.7. SUMMARY POLL RESULTS FOR THE DEMAND WORKSHOP





Number of respondents: 15. What type of information sharing forum would generate the most amount of value for you if it were a focus forum?
Number of respondents: 15. What type of information sharing forum would generate the most amount of value for you if it were a geographic forum?
Number of respondents: 15. What type of information sharing forum would generate the most amount of value for you if it were a market forum?
Number of respondents: 6. What type of information sharing forum would generate the most amount of value for you if it were a platform forum?
Number of responses: 41. What information do you need regularly (top three).
Source: ACIL Allen, contentgroup

D.6 Conservation

- There is a market failure for species that are difficult to collect etc.
- The challenges/limitations to conservation are:
  - threats that are not well managed:
    - land clearing (driven by government, local councils)
    - overpopulation
    - an absence of targets for sustainable land use
    - poor long-term planning (i.e. climate-adjusted translocation)
    - seed accessibility
    - poor coordination — participants do not know where to go to get support, and government departments have conflicting policies
  - there is limited government follow-up on conservation activities
  - direct seeding is difficult and can have poor outcomes if not well managed which wastes seed
  - it is hard to do long-term research on SPAs to understand the impacts on genetic diversity.
- There is an opportunity to:
  - share conservation information with the restoration sector to improve direct seeding outcomes
  - better coordinate and leverage lessons from across the sector, including cross-border projects
  - generate an additional income stream from philanthropy
  - consider functional improvements and climate-adaptation
  - better train workers in the sector, which is dominated by volunteers
  - build storage capacity.

D.7 R&D

- Challenges:
  - the small scale of funding creates silos and competition, and forces a focus on only a small area of the required research with only a few researchers
  - there is no consistent support to breakdown silos between researchers and between research and application. Grants should focus on cross agency/collaborative issues

- funding is tied to political cycles and looks at short-term outlook/outcomes — support is needed for longer-term projects/outcomes
  - support should be top down and coordinated at federal and state government level
  - need alternate funding through commercial streams
- limited research on individual species and agreed framework for restoration
- poor acknowledgement of climate change
- poor leveraging of private businesses to conduct/support R&D.

- Opportunities:
  - better match resource and skill availability
  - incorporate Traditional Owner priorities and knowledge
  - use conferences to convey information
  - R&D should:
    - focus on seed banking techniques, seed ecology, germination, taxonomic and genetic issues
    - focus on species protection
    - better incorporate understanding of genetics and climate change into restoration.

D.8 National

- Pillars are accepted, no clear gaps.
  - the greatest potential is for quality, information (visible and transparent demand signal across different markets, policies), and capacity.
- There is a need for:
  - coordination/networking
  - a more visible/shared inventory
  - support to grow (funding and incentives for landholders).
- Key players: federal and state governments that drive demand.
- Constraints: market signal (one year minimum at contract stage), knowledge/systems, consistency, buyer education.
- CoP: transparent, supplementary to standards, basis for labelling, willingness to pay.
- Governance: advocacy/standards, requires funding/recognition/acceptance, national coordination/regional implementation, leverage existing bodies, promote the industry, be a voice to government, be representative.
- *Strategy* needs to link to national and international strategies/polices.

D.9 Western Australia

- Demand is less of an issue in WA due to consistent demand from mining clients. The bigger issues are supply, quality and provenance.
  - capacity building is the most important pillar for growing the industry: attracting new workers, building skills, and improving knowledge of the industry and standards which support buyers and sellers
  - there are some current efforts to drive interest in Traditional Owners to grow supply, including building skills and business capacity
  - a lot of collectors are retirement age, meaning knowledge is being lost as they leave.
- RIAWA has developed Seed Standards and Accreditation for native seed in WA.
- WA has a more developed approach to training than other states due to needs from the mining industry.
- WA has better diversification of funding streams for R&D due to partnerships with mining companies.
- Because WA is large and the supply of appropriate provenance seed is an issue. If supply is short, species are substituted.

D.10 New South Wales

- Pillars with the most potential are Quality and Standards, Smarter Regulation and Information Provision.
- NSW government is looking at a whole-of-government approach and applying a climate lens to revegetation
  - this aims to produce a 'future ready' genetically diverse collection.
- There are similar species and ecosystems in NSW/ACT in particular, but also on the borders with QLD and VIC. There is a need for a national approach.
- Healthy Seeds is delivered by Australian Network for Plant Conservation, funded by the NSW Government through the Environmental Trust. It aims to provide an evidence-based road map to secure a reliable, genetically-appropriate, native seed supply in NSW for restoration, and to update the *FloraBank Guidelines* for best practice native seed collection and use.[48]
- There is a lack of leadership and coordination across government, buyers and suppliers:
  - Local Land Services and Department of Agriculture/Primary Industries are often the point of call for Information Provision (where to buy seed, availability). But there is poor coordination within and across government agencies and poor understanding of what native seed is used for and how it contributes value. This hinders small business growth.

[48] https://www.anpc.asn.au/healthy-seeds/

- Constraints: NSW lacks clear policy and strategy, resourcing for regulation, poor licensing time frames and restrictions, lack of knowledge sharing spaces/networks, market instability and high staff turnover.

D.11 Victoria

- The Pillar with the most potential to develop the sector is Capacity.
  - there is a need to more broadly consider Traditional Owners:
    - Victoria is in the process of engaging with the Dja Dja Wurrung peoples to look at the potential to conduct revegetation services. A report is due in 2021.
  - need to bring together Traditional Owner knowledge and western science.
  - very poor coordination across the state.
  - low funding availability for conservation sector and seed banking facilities.
  - ageing workforce/lack of interest in the younger generation.
- There is a large demand for revegetation, which may outstrip the supply of land and seed:
  - target 200K hectares of revegetation in priority locations in Victoria by 2037. Since 2015, there has only been 9K, but not all in priority locations
  - attributed to good roll-out of revegetation initiatives in Victoria, and a federal trial in the north central Catchment Management Authority (CMA) area for diverse carbon farming
  - CMAs have been working on growing the sector for years (hampered by funding priority change from revegetation to restoration).
- The constraints are different for different organisation types and sizes. These are mostly focused on clear demand and policy signals, partners and networks.
- There is a need for a CoP (maybe FloraBank) to raise the bar, guide labelling, streamline permits. This should be compulsory (with a transition period).
- There is a need for an industry body to provide nationally consistent standards, accountability and direction. This should consider where value can be added (i.e. state/regional level).

D.12 Queensland

- Pillars: 'quality standards' and 'capacity building' are the priorities for the sector. 'Partners and networks' is the missing link.
- Need to invest in training — University of Queensland is well-placed to train collectors (how to collect and properly store seed):
  - QLD has a rich diversity of species and training will require local content.

- Supply of suitable provenance seed is a constraint, especially south-east QLD (rainforest):
  - drought has really exposed shortfalls in the supply chain and inability of trees to seed.
- Brokerage and awareness are essential for working with Traditional Owners.
- Poor regulation and communication across government areas hinders supply:
  - QLD's biodiscovery policy guides protecting and developing commerce from biodiversity.
- Mining industry dominates demand — there is a different goal from rehabilitation (ground cover, securing the soil, and building an ecosystem to meet a minimum hurdle, e.g. regulation, community expectation).

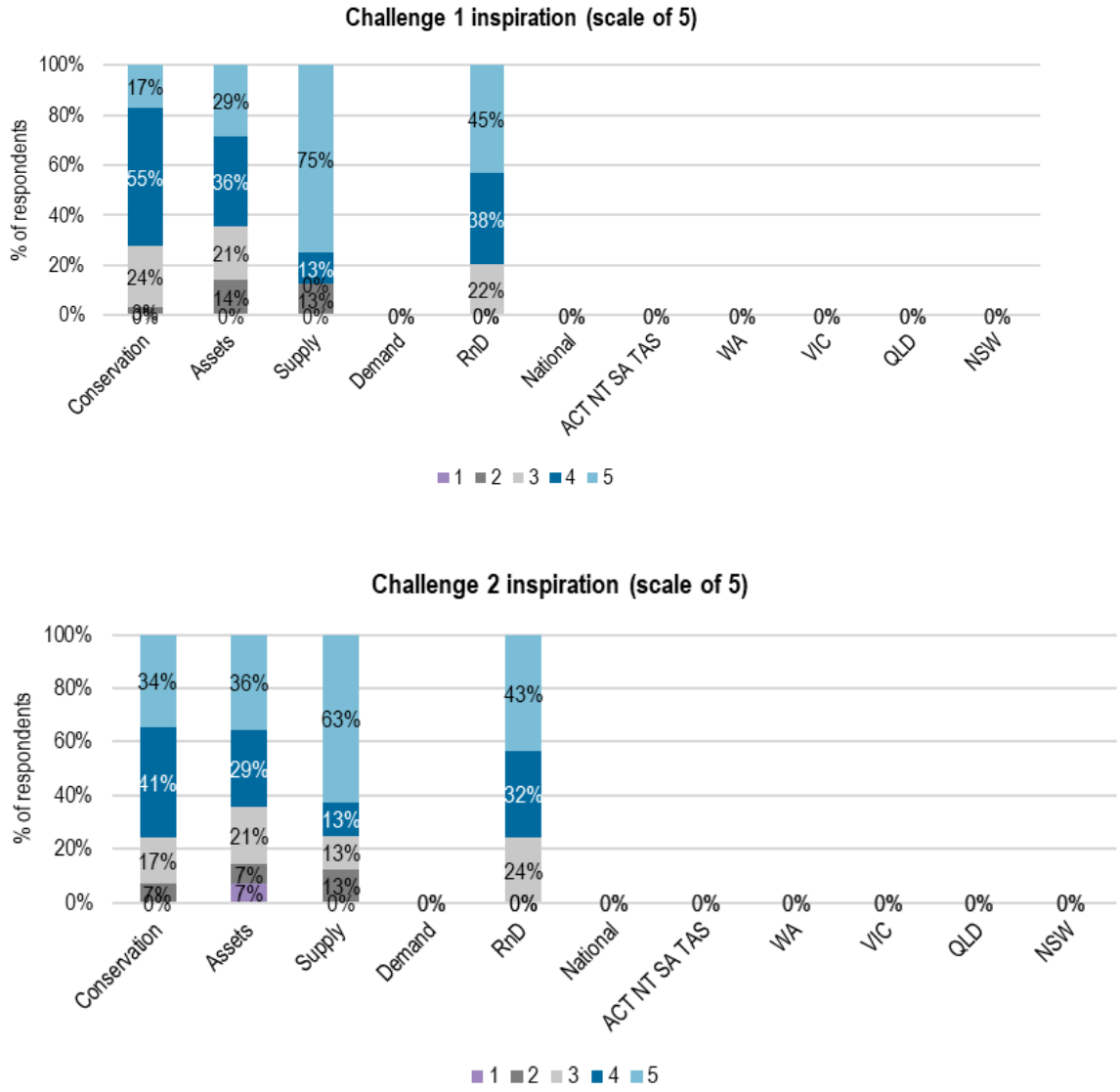
D.13 South Australia/Tasmania/Northern Territory/Australian Capital Territory

- All 5 pillars are important and interconnected. Information provision and quality were polled as the 'most' important.
- The key constraints depend on the stakeholder. They include:
  - partnerships
  - access (to public and private land, skilled staff)
  - timing
  - viability
  - policy issues
  - lack of a central portal for sector contacts.
- Quality is essential for the industry. A CoP is important and should leverage from existing approaches. They provide insurance when things go wrong.
- CoP should be voluntary, with market incentives leading suppliers to be preferred to guarantee quality:
  - the poll showed an equal preference for use as form of compliance or not.
- Poll suggests a new industry body is needed. It could also be the Australian Seed Federation (or someone else). It should perform the *Strategy* secretariate function.
- The sector in NT is quite small with a low level of demand and limited opportunities for growth (regional focus on agricultural/pastoral development rather than restoration of cleared areas).
  - NT faces different fire conditions to south-east Australia. There are near-annual grass fires that affect fairly resilient species. There is a need for weed clearing and potential for revegetation using bushfoods.
  - FloraNT is a resource for plant identification and cultivation provided by the Desert Park. This could be expanded with additional resources.

Attachment D.A

Figure D.A.1 provides a summary of the poll results for the topic of Challenges, by workshop and question. This shows that most consider Challenges 1 and 2 to be inspirational.

FIGURE D.A.1. CHALLENGES SUMMARY BY WORKSHOP AND QUESTION

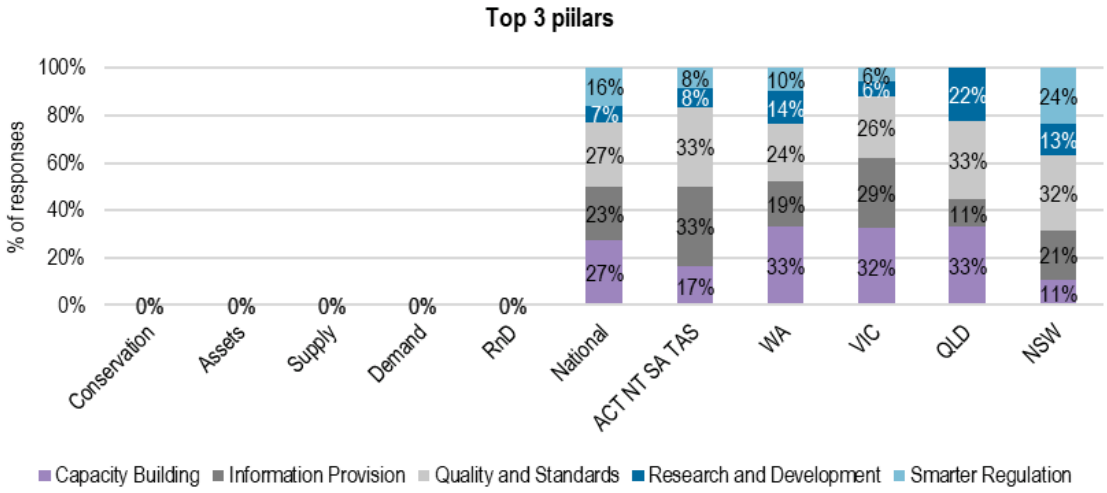


Number of respondents: 88. Out of 5, how much does challenge 1 and 2 inspire you to develop the native seed sector? (1 being 'not at all' and 5 being 'a lot')

Source: ACIL Allen, contentgroup

Figure D.A.2 provides a summary of the poll results for the topic of Pillars, by workshop. This shows that most agree that the most important Pillars are Quality and Standards, Capacity Building and Information Provision.

FIGURE D.A.2. PILLARS SUMMARY BY WORKSHOP



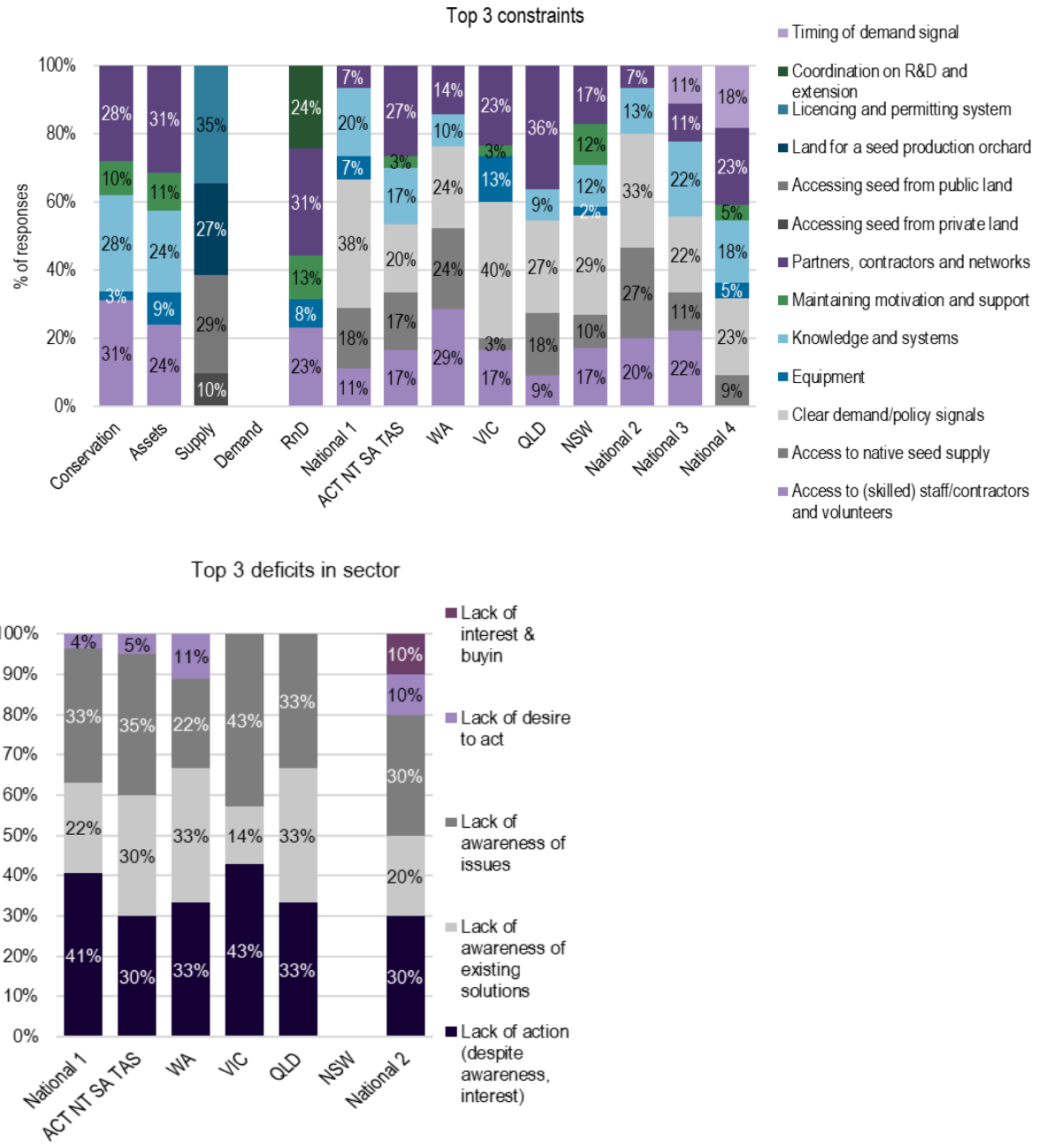
Number of responses: 170. Please pick the three pillars that have the highest potential to develop the native seed sector.

Source: ACIL Allen, contentgroup

Figure D.A.3 provides a summary of the poll results for the topic of constraints (left graph) and deficits (right graph), by workshop and question. This shows that:

- The constraints varied across workshops, with the most common constraints being access to skilled staff and volunteers and partners and networks. Other workshop-specific constraints include:
  - knowledge/systems in the conservation and capacity/assets workshops
  - licensing/permit system, land for SPAs and knowledge/systems in the supply workshops
  - coordination on R&D and extension in the R&D workshop
  - clear demand and clear policy signals in the national, second national, ACT/NT/SA/TAS, WA, VIC and QLD workshops
  - clear demand and policy signals in the NSW workshop.
- The most common deficits are lack of awareness of issues, lack of awareness of existing solutions and lack of action (despite awareness, interest).

FIGURE D.A.3. CONSTRAINTS AND DEFICITS SUMMARY BY WORKSHOP AND QUESTION

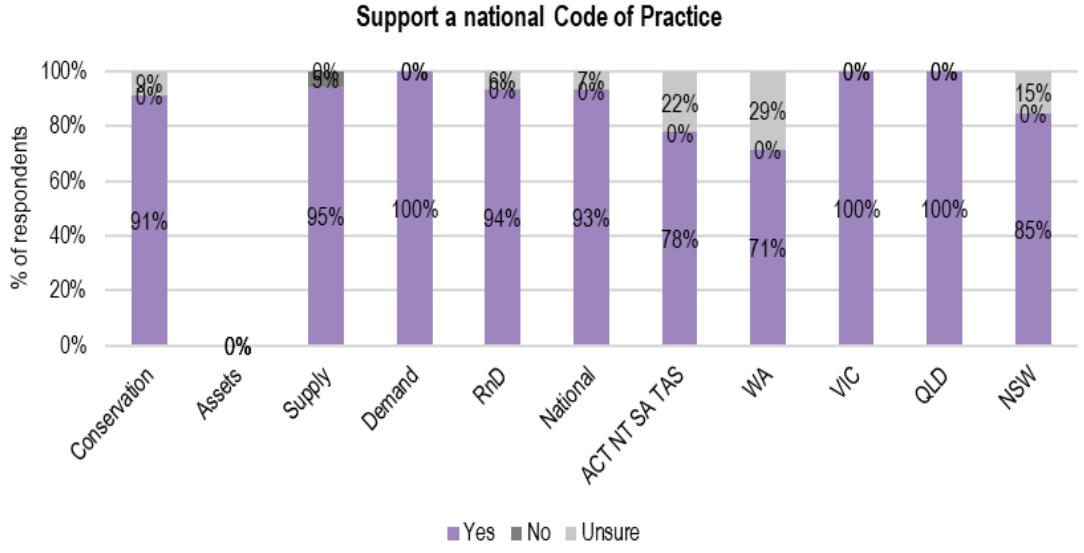


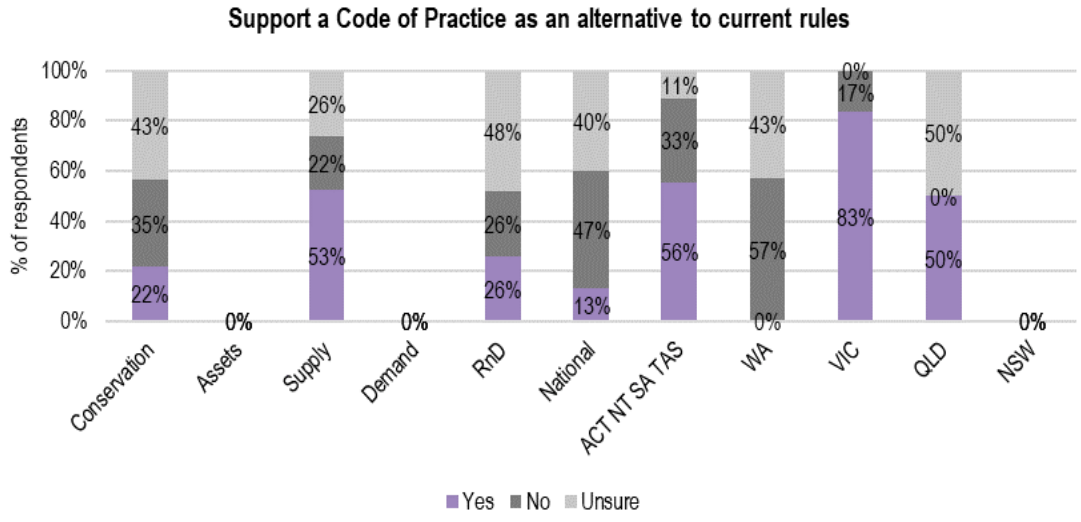
Number of respondents: 487. Please select the top three constraints that your organisation faces.
Number of respondents: 76. Where is the greatest deficit within the sector? Please pick the top 3.
Source: ACIL Allen, contentgroup

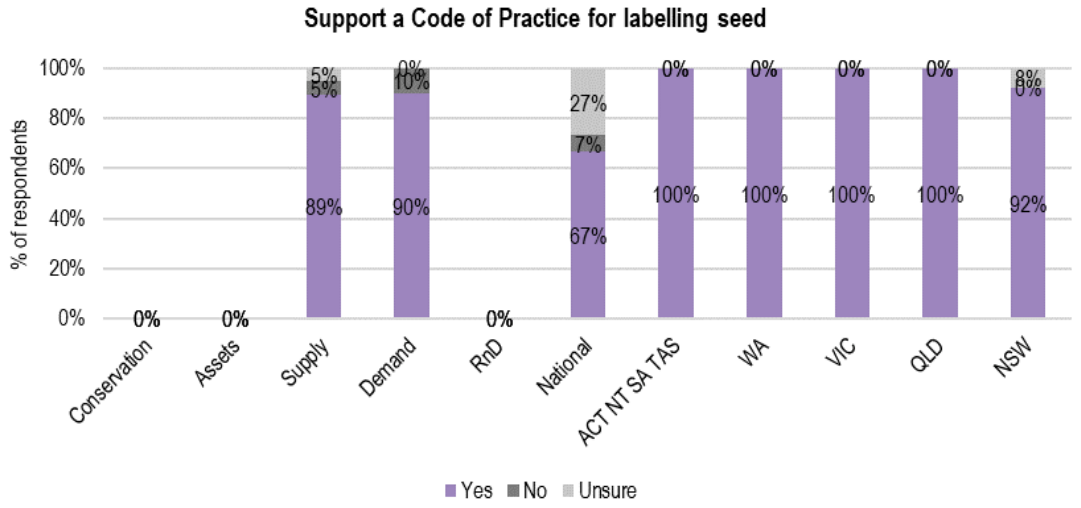
Figure D.A.4 provides a summary of the poll results for the topic of Codes of Practice, by workshop and question. This shows that:

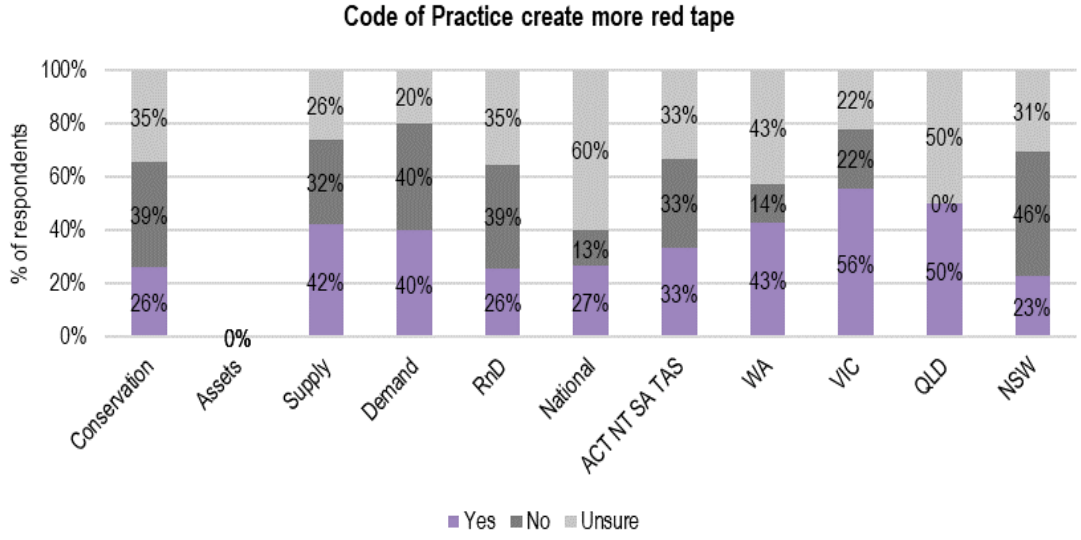
- Most respondents across all workshops supported a national Code of Practice.
- There was a large amount of uncertainty across the respondents on whether the CoP should be an alternative to current rules:
  - most considered that it should be an alternative to current rules in the Supply, ACT/NT/SA/TAS, VIC and QLD workshops
  - most considered that it should not be an alternative to current rules in the Conservation, National, and WA workshops
  - responses were even in the R&D workshop.
- Most support a CoP for labelling seed.
- There was a large amount of uncertainty across the respondents on whether the CoP would create more red tape for businesses:
  - most considered that it would create more red tape in the Supply, National, WA, and VIC workshops
  - most considered that it would not create more red tape in the Conservation, R&D, and NSW workshops
  - responses were even in the Demand, ACT/NT/SA/TAS and QLD workshops.
- The best practice guidelines that were seen to be most valuable were:
  - testing seed
  - storing seed
  - purchasing seed
  - managing seed production areas.

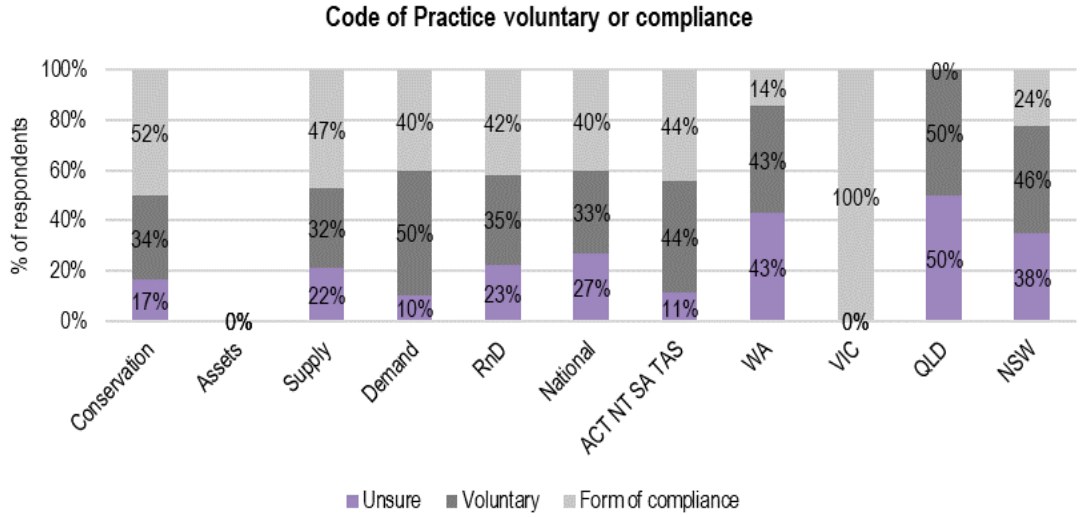
FIGURE D.A.4. CODES OF PRACTICE SUMMARY BY WORKSHOP AND QUESTION




Support a Code of Practice as an alternative to current rules
% of respondents
100%
80%
60%
40%
20%
0%
43%
35%
22%
0%
26%
22%
53%
0%
48%
26%
26%
40%
47%
13%
11%
33%
56%
43%
57%
0%
0%
17%
83%
50%
0%
50%
0%
Conservation
Assets
Supply
Demand
RnD
National
ACT NT SA TAS
WA
VIC
QLD
NSW
Yes
No
Unsure


Support a Code of Practice for labelling seed
% of respondents
100%
80%
60%
40%
20%
0%
0%
0%
5%
89%
0%
10%
90%
0%
27%
7%
67%
0%
100%
0%
100%
0%
100%
0%
100%
8%
92%
Conservation
Assets
Supply
Demand
RnD
National
ACT NT SA TAS
WA
VIC
QLD
NSW
Yes
No
Unsure


Code of Practice create more red tape
% of respondents
100%
80%
60%
40%
20%
0%
35%
39%
26%
0%
26%
32%
42%
20%
40%
40%
35%
39%
26%
60%
13%
27%
33%
33%
33%
43%
14%
43%
22%
22%
56%
50%
0%
50%
31%
46%
23%
Conservation
Assets
Supply
Demand
RnD
National
ACT NT SA TAS
WA
VIC
QLD
NSW
Yes
No
Unsure

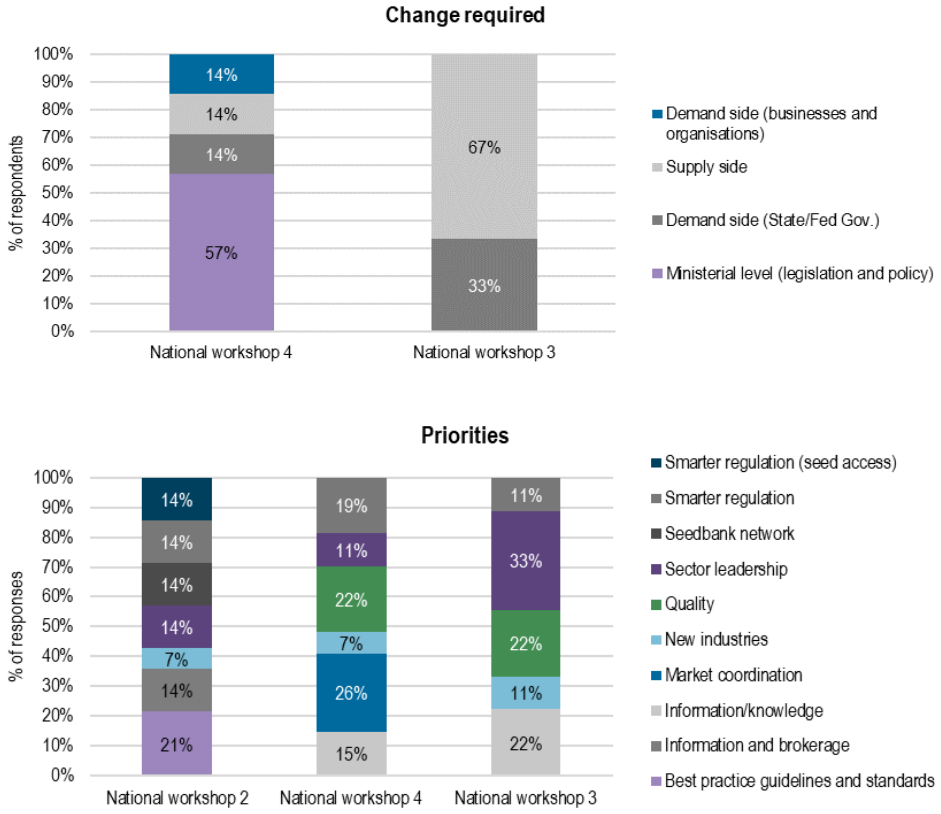


Number of respondents: 129. Do you support the development of a national Code of Practice for the Native Seed and Plant Sector?
Number of respondents: 104. Do you support a Code of Practice as an alternative to current licensing and regulation?
Number of respondents: 84. Do you support a Code of Practice for labelling native seed?
Number of respondents: 138. Do you think a Code of Practice could create more red tape for small business?
Number of respondents: 138. Do you think the Code of Practice should be voluntary or be used as a form of compliance?
Number of respondents: 44. What best practice guidelines are most important to you? Please select your top 3.
Source: ACIL Allen, contentgroup

Figure D.A.5 shows the changes required by the sector and the top priorities. This shows:

- the greatest changes required were at the supply side (national workshop 3) and at the ministerial level (legislation and policy) (national workshop 4)
- the highest priorities were best practice guidelines and standards (national workshop 2), sector leadership (national workshop 3) and market coordination (national workshop 4).

FIGURE D.A.5. CHANGES REQUIRED AND PRIORITIES SUMMARY BY WORKSHOP AND QUESTION



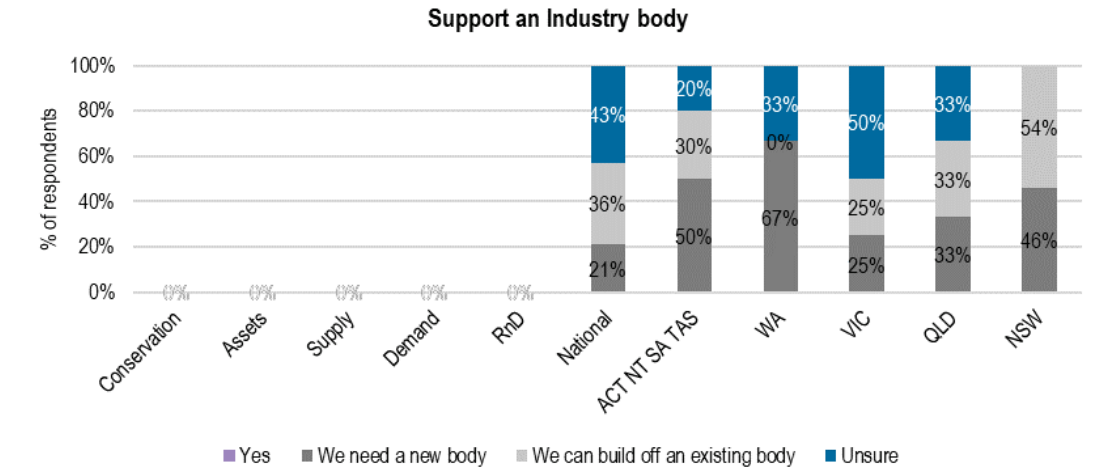
Source: ACIL Allen, contentgroup

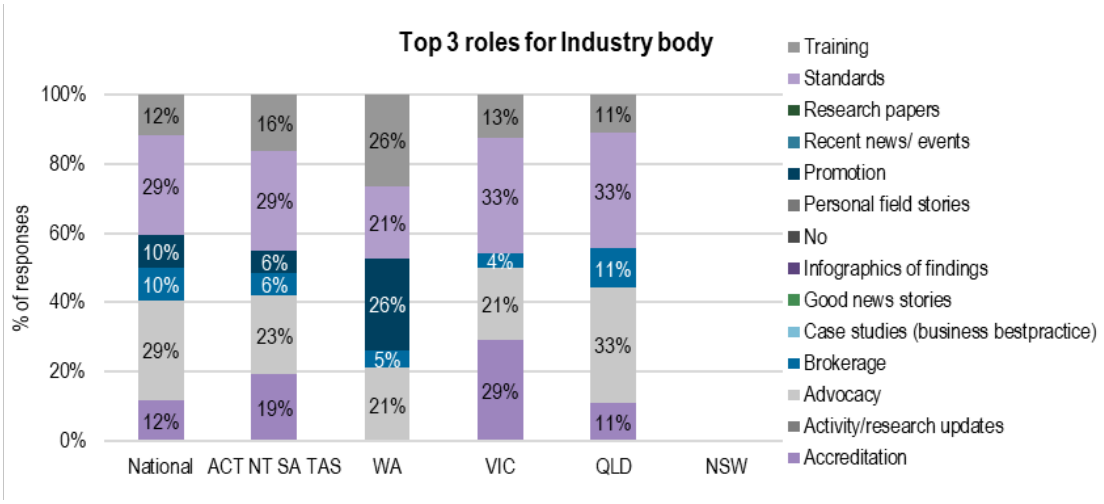
Figure D.A.6 provides a summary of the poll results for the topic of Governance, by workshop and question. This shows that:

- There was a large amount of uncertainty across the respondents on whether there was a need for a new body, or building off an existing body.
  - a new body was preferred by most participants in the ACT/NT/SA/TAS and WA workshops
  - building off an existing body was preferred by most participants in the national and NSW workshops
  - respondents were evenly divided for the VIC and QLD workshops.

- The top roles for an industry body were mostly consistent, with four roles most commonly identified across all states:
  - standards, training, advocacy and accreditation
  - promotion was more commonly identified in the WA workshop than in other workshops.

FIGURE D.A.6. GOVERNANCE SUMMARY BY WORKSHOP AND QUESTION





Number of respondents to the question on 'support for an industry body': 67.
Number of responses to the question on 'top three roles for an industry body': 125. Do you support establishing an industry body for the sector? What are the three most valuable roles an industry body should fulfil?

Source: ACIL Allen, contentgroup