

SUBMISSION

Submission to the Productivity Commission

Submission to the inquiry into the effectiveness of Part 3 of the Future Drought Fund Act 2019

03 March 2023

The Australian Academy of Technological Sciences and Engineering (ATSE) is a Learned Academy of independent, non-political experts helping Australians understand and use technology to solve complex problems. Bringing together Australia’s leading thinkers in applied science, technology and engineering, ATSE provides impartial, practical and evidence-based advice on how to achieve sustainable solutions and advance prosperity.

ATSE welcomes the opportunity to respond to the Productivity Commission’s inquiry into the effectiveness of Part 3 of the Future Drought Fund Act 2019. ATSE supports the Fund’s vision to increase resilience to drought and climate change impacts. ATSE makes the following recommendations to build on the impact of the Fund’s current activities:

Recommendations

Recommendation 1: Future Drought Fund investments should focus on building resilience to climate change by developing rural and regional communities and their economies.

Recommendation 2: The Future Drought Fund should focus on establishing foundational structures to combat drought-related challenges utilising a system of systems approach, with transparent and publicly accountable funding decisions.

Recommendation 3: Drought Resilience Adoption and Innovation Hubs should establish national coordination between its regional programs and other relevant established federal and state programs.

Recommendation 4: Industry collaboration activities should be prioritised through the Drought Resilience Adoption and Innovation Hubs.

Recommendation 5: Programs established by the Future Drought Fund should be developed in partnership with Aboriginal and Torres Strait Islander peoples and communities, and seek to apply Traditional Knowledge where possible and relevant.

Recommendation 6: The Future Drought Fund should invest in training and education programs that target current and emerging skill shortages to build and prepare communities for droughts.

Building resilience to climate change

Increased frequency and severity of a wide range of extreme events and worsening drought are widely expected consequences of climate change. As such, the Future Drought Fund should be focused on its broader objective to build resilience to extreme events caused by climate change. Deloitte Access Economics found that natural disasters caused by climate change cost the Australian economy around \$38 billion per year (Deloitte, 2021). Effective early action to adapt can reduce or avoid some of these costs, and the impacts on affected communities.

Funds allocated for drought preparation should also be focused on supporting rural enterprises, and prioritise projects aimed at diversifying and supporting rural local economies. Communities that are resilient to climate change are able to effectively prepare for and recover from its effects and continue to thrive. Therefore, funds from the Future Drought Fund aimed at preparing regional and rural communities for drought can also be effectively invested in ensuring various essential services (schools, healthcare facilities, retail goods, etc.) are available in these communities. Working with communities to prepare for the risks associated with climate change and to have access to the resources required to be healthy during a severe event will create more resilient communities and even reduce the time and cost needed for recovery. Investment in essential services also makes the regions less reliant on bigger centres and more resilient to the adverse effects of climate change.

Recommendation 1: Future Drought Fund investments should focus on building resilience to climate change by developing rural and regional communities and their economies.

Enhancing foundational capacity

Drought is a complex issue that requires a multi-faceted approach and will require long-term planning and sustained effort to build drought resilience. ATSE in its position statement on [Building a Resilient Australia](#) outlined that achieving resilience requires a reliance on a “system of systems” approach¹ (Australian Academy of Technological Sciences & Engineering, 2022).

The Fund's vision should focus on establishing foundational structures and capacity from a system of a systems perspective in order to combat a multifaceted problem like drought. For example, this would support building foundational resilience in municipal water supplies. Water supplies in towns could be assessed to meet a minimum standard for resilience to a range of extreme weather events including drought, and those assessed to have an insufficient level of water supply resilience could be prioritised for improvement. Improving foundational capacity should be based on sound research and data-driven analysis to ensure that resources are allocated to the most pressing concerns and effective solutions.

There are already programs run by state governments (like the [Farming and Community Group Drought Funding Program](#) by Victorian Government and the [Regional water strategies in New South Wales](#)) that are focused on solving similar problems and enhancing foundational capacity. The Future Drought Fund can build on these programs and provide national coordination. For fund allocations, public transparency should be prioritised. The impact of the Fund's programs should also be measured and reported on a regular basis.

Recommendation 2: The Future Drought Fund should focus on establishing foundational structures to combat drought-related challenges utilising a system of systems approach, with transparent and publicly accountable funding decisions.

Coordinating activity through drought resilience adoption and innovation hubs

Drought resilience adoption and innovation hubs are essential assets for assisting agricultural industries and communities to get ready for droughts. The current structure follows a distributed model with eight hubs across Australia with each hub having several nodes in its particular region; this can lead to a lack of national coordination. ATSE recommends increased coordination between the eight Drought Resilience Adoption and Innovation hubs and other similar state and territory government-run programs.

National coordination would assist reduce duplication of resources and increase performance by focusing on greater knowledge sharing across the hubs. A national approach must make use of already established government corporations, such as the Rural Research and Development Corporations (which has helped drive agricultural innovation by allowing the Australian government and primary producers to co-invest in research and development (R&D) that benefits both industry and regional communities). ATSE recommends the following approaches for improved program performance:

- coordination between the eight Drought Resilience Adoption and Innovation Hubs programs

¹ A systems of systems approach is a way of thinking and problem solving that involves viewing a complex system as a whole, rather than a collection of individual parts. It involves examining interactions and relationships between the different components of the system and understanding how changes in one part impact other parts of the system. This allows for a more comprehensive understanding of the problem and more effective solutions being developed (Arnold & Wade, 2015).

- coordination of the Drought Resilience Adoption and Innovation Hubs programs with that of the most relevant Rural Research and Development Corporations,
- coordination with the projects of the most relevant state government departmental programs, and
- coordination with relevant University-based ARC-funded programs.

Recommendation 3: Drought Resilience Adoption and Innovation Hubs should establish national coordination between its regional programs and other relevant established federal and state programs.

Prioritising industry collaboration and strategic partnerships in the Drought Resilience Adoption and Innovation Hubs

Industry engagement and strategic alliances are critical in supporting and promoting innovation to prepare communities for drought resilience. Current Future Fund programs, such as Drought Resilience Adoption and Innovation Hubs, are focused on research and development and would benefit from increased industry collaboration and strategic alliances. Collaboration and strategic partnerships enable many stakeholders to contribute their skills, resources, and insights in order to generate effective solutions. To support broad-scale practice change and allow commercial incentives to operate, increased industry engagement and collaboration in the hubs should be encouraged. ATSE recommends the Commission encourages programs delivered in the Fund to foster a diverse innovation system to deliver more options for community progress.

Recommendation 4: Industry collaboration activities should be prioritised through the Drought Resilience Adoption and Innovation Hubs.

Utilising Aboriginal and Torres Strait Islander Knowledge

Aboriginal and Torres Strait Islander communities have a wealth of deep knowledge and practice in adapting to the challenges posed by droughts and other environmental stresses (Woodward et al., 2020). Planning and solution development to improve drought resilience will be more effective in partnership with Aboriginal and Torres Strait Islander Peoples and communities. ATSE believes it is vital the Fund develops programs that are not only consulted with but also led by Aboriginal and Torres Strait Islander organisations and communities. This should include the Drought Resilience and Innovation Hubs as well as any other training and education programs.

Recommendation 5: Programs established by the Future Drought Fund should be developed in partnership with Aboriginal and Torres Strait Islander peoples and communities, and seek to apply Traditional Knowledge where possible and relevant.

Investing in training and education programs

Droughts have associated social, economic, environmental and well-being impacts. There is a need to build economic, environmental and social resilience to drought for communities and associated industries. Investment in training and education programs helps build local capacity to manage drought and improve communities' abilities to prepare for future events. Investments in education programs help build the capacity of local personnel, which play a crucial role in building drought resilience and response efforts.

Existing initiatives that are run by the Fund like the mentoring programs by the Australian Rural Leadership Foundation are important opportunities for knowledge diffusion (Australian Rural Leadership Foundation, 2021). Programs such as these provide an opportunity for experienced professionals to share knowledge,

help build relationships and foster collaboration, leading to the development of more comprehensive solutions to improve drought resilience.

Currently, one of the biggest challenges to ensure resilience is securing a skilled workforce. ATSE's recent report [Our STEM Skilled Future](#) identifies the challenge as not simply to meet current skills but to rebuild and modernise the educational and training capacities of universities and vocational education and training institutions so they can provide the graduates, professionals and tradespeople required in future decades (Australian Academy of Technological Sciences and Engineering, 2022). This involves a whole-of-government approach to invest in the skills of Australians, create as many opportunities in the regions as possible, support secure pathways for overseas workers, and ensure workers are protected. ATSE supports the Future Drought Fund's existing initiatives to invest in training and education programs to improve human capital and encourages the Fund to continue to offer support to these programs to meet current and emerging skill shortages.

Recommendation 6: The Future Drought Fund should invest in training and education programs that target current and emerging skill shortages to build and prepare communities for droughts.

References

- Arnold, R. D., & Wade, J. P. (2015). A Definition of Systems Thinking: A Systems Approach. *Procedia Computer Science*, 44, 669–678. <https://doi.org/10.1016/j.procs.2015.03.050>
- Australian Academy of Technological Sciences & Engineering. (2022). *Building a resilient Australia*. <https://www.atse.org.au/wp-content/uploads/2022/10/220930-ATSE-Position-Statement-Building-a-Resilient-Australia.pdf>
- Australian Academy of Technological Sciences and Engineering. (2022). *Our STEM skilled future — An education roadmap for an innovative workforce*. <https://www.atse.org.au/research-and-policy/publications/publication/our-stem-skilled-future-an-education-roadmap-for-an-innovative-workforce/>
- Australian Rural Leadership Foundtaion. (2021). *Drought Resilience Leaders Development Program*. <https://rural-leaders.org.au/regional-leadership-programs/drought-resilience-leaders-program/drought-resilience-leaders-development-program/>
- Deloitte. (2021). *Special report: Update to the economic costs of natural disasters in Australia*. <https://www2.deloitte.com/au/en/pages/economics/articles/building-australias-natural-disaster-resilience.html>
- Woodward, E., Hill, R., Harkness, P., & R. Archer. (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*. <https://www.csiro.au/en/research/indigenous-science/Indigenous-knowledge/Our-Knowledge-Our-Way/OKOW-resources>