

2023

TNQ Hub Response to Productivity Commission



**Tropical North Queensland
Drought Resilience Adoption
and Innovation Hub**

11 July 2023

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Attn: Commissioners Joanne Chong and Malcolm Roberts

Respondent: Tropical North Queensland Drought Resilience Adoption and Innovation Hub (TNQ Hub)

Dear Commissioners,

Thank you for the opportunity to make a submission to the Productivity Review of Part 3 of the Future Drought Fund Act 2019 Interim Report.

The TNQ Hub is led by James Cook University out of the Ideas Lab on the Nguma-bada Campus in Cairns. Working in a 'hub and spoke' model, the TNQ Hub is partnered closely with six natural resource management (NRM) groups (Nodes) across Tropical North Queensland (TNQ) to deliver drought resilience activities across the region. The Drought Resilience Research and Adoption Program invests in collaborative research, development, extension, adoption, and commercialization activities. These activities help land managers and Tropical North Queensland communities to become more prepared for, and resilient to, future droughts.

The TNQ Hub works alongside its Node Members to enhance the knowledge and capacity of land managers to better understand the importance of being better prepared and more resilient to changing climates. Resilience building is entrenched in each Node NRM and the TNQ Hub continues to collaborate regionally to identify opportunities to enhance the public good by building on and sharing knowledge and expertise with the agricultural sector, the agricultural landscape, and communities across the TNQ region.

Through a close national community of practice, the eight Resilience, Adoption and Innovation Hubs have established a strong collaboration and knowledge sharing culture and collectively engage in solutions to support the FDFs aims of protecting Australian agriculture and regional communities from the effects of a changing climate. In addition, the TNQ Hub's interactions with the Department of Agriculture, Fisheries and Forestry (AFF) Future Drought Fund teams have been very positive and supportive.

The TNQ Hub views the FDF as a critical mechanism towards increasing the preparedness of agricultural land managers, communities, and regions to build resilience to future climate variability challenges. The TNQ Hub, since its establishment, has formed networks of First Nations peoples, industry, government and producers and their communities to collaborate and identify opportunities to address gaps by leveraging existing delivery capabilities and look at ways to scale across TNQ, but also the national landscape through the national Hub network.

Thank you for your consideration of this submission in response to the Interim Report,

Professor David Phelps

Director, Tropical North Queensland Drought Resilience Adoption and Innovation Hub

Interim recommendation 1. Building resilience to climate change should be explicitly recognised as an objective

The Tropical North Queensland Drought Resilience Adoption and Innovation Hub (TNQ Hub) strongly supports the goal of improving the resilience of the land managers, communities, and regions involved in agricultural production in Australia. We suggest that the drought and climate preparedness and resilience of rural Australia needs to be enhanced over the next 12-15 years in the face of changing climatic conditions.

The Future Drought Fund ([Drought Resilience Funding Plan 2020 to 2024](#)) Determination 2020 defines drought resilience as *'the ability to adapt, reorganise or transform in response to changing temperature, increasing variability and scarcity of rainfall and changed seasonality of rainfall, for improved economic, environmental and social wellbeing'*. This is based on the legislated meaning of drought resilience within the [Future Drought Fund Act 2019](#).

This definition is consistent with international literature (IPCC 2014, Kelly and Phelps 2019, Phelps and Kelly 2019, Phelps and Kelly 2020), and can be described in lay terms as *'building back stronger, better and readier'*. It is important to consider that resilience includes adapting, re-shaping, and transforming to a new 'reality', rather than attempting to maintain the status quo. **It is essential that resilience includes the ambitions of a community to adapt and transform, progressing towards socially desired goals and values.**

The TNQ Hub supports a national approach, grounded in local and regional solutions and services, through the network of eight Drought Hubs. This National Hub Network comprised of the Directors of all eight Hubs, has provided a separate response to the Productivity Commission. Nationally, there are 142 projects being delivered through the Drought Hubs. This provides a unique opportunity to pilot and learn from projects.

The TNQ Hub supports a triple bottom line approach of improving environmental, social, and economic dimensions as a holistic approach to building climate resilience. This triple bottom line can also be conceptualised as three underpinning and inter-related capitals, each as important as the other to enhance resilience. Each of these need to be achieved at individual farm and business, town and community, and regional scale to be effective. However, the measures that build resilience differs between the three capitals and scales. Aligning the three capitals and three scales provides a simple conceptual framework to identify where investment can have the greatest impact in building resilience (Figure 1).

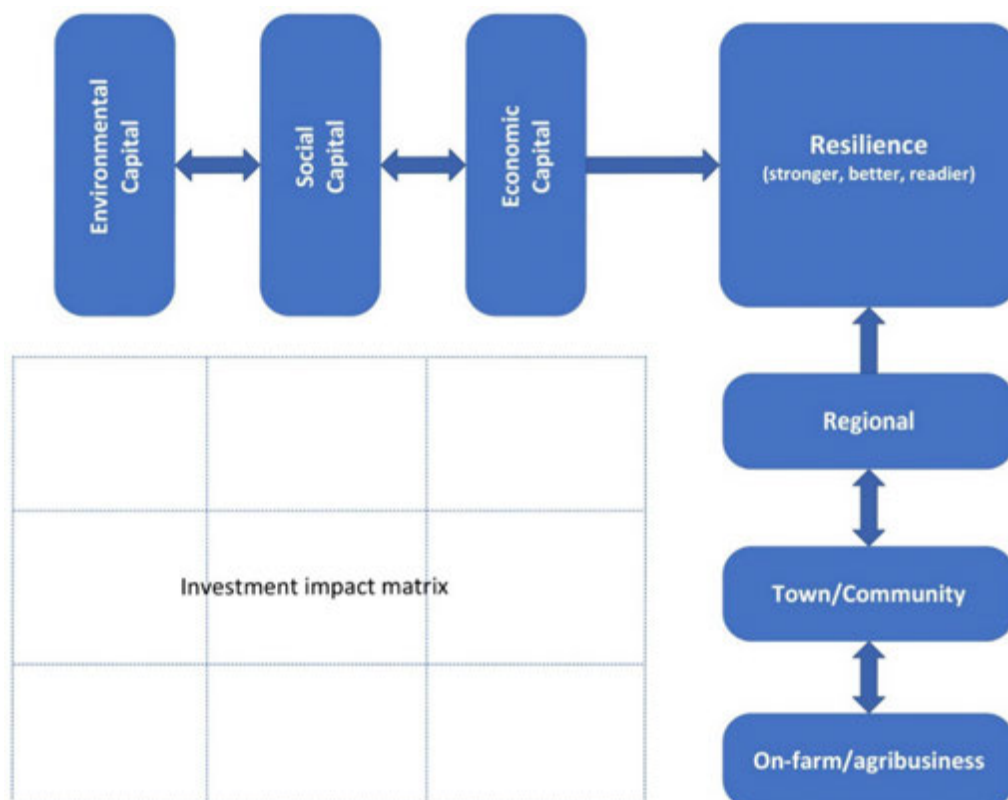


Figure 1. Conceptually, resilience is enhanced by investing in Environmental, Social and Economic Capitals at farm, community and regional scales. This can be used as a simple matrix to guide investment based on potential impact.

The implementation and investment of resilience measures are different at each scale. When placed in the impact investment matrix, investment pathways can be better identified (Table 1). Further detail can be built into the conceptual diagram and matrix to fine tune investment pathways.

Table 1. Example application of the drought resilience impact investment matrix.

Resource	Social	Financial	
Enhance natural processes e.g., ecosystem services for environmental benefits	Enhance internal and external socioeconomic networks to build adaptive capacity	Economic diversification beyond rainfed dependence Capturing place-based advantages	Regional
Improve infrastructure for liveability and population retention	Investing in future town leaders to empower local communities	Reducing business losses during downturns	Town/community
Maximising land condition and soil health for production benefits	Enhancing decision making capacity for drought preparedness	Optimising production efficiency Increasing cash and asset reserves	Farm/agribusiness

Importantly, these insights were gained through combining the experiences from central-western Queensland during the 2012-2022 drought with scientific frameworks to describe practical ways to enhance resilience. These insights are presented in detail in the following publications:

- Kelly, Dana (2018). Beyond the Dust. Impact of Drought on Town Businesses in Central West Queensland and some solutions. Published by the Western Queensland Drought Committee. Available from <http://wqda.org.au/beyond-the-dust/>
- Kelly, Dana and Phelps, David (2019). Looking beyond the D.U.S.T. – building resilient rangeland communities. Available from <https://doi.org/10.1071/RJ18047>
- Phelps, David and Kelly, Dana (2019). Overcoming drought vulnerability in rangeland communities: lessons from central-western Queensland. Available from <https://doi.org/10.1071/RJ18052>
- Phelps, David and Kelly, Dana (2020). A call for collaboration: linking local and non-local rangeland communities to build resilience. Available from <https://doi.org/10.1071/RJ20048>

These publications are attached and form part of this submission. In essence, Kelly (2018) and Phelps and Kelly (2019) highlighted that all investment and policies should aim to build resilience and cautioned that there is a risk that many measures can ultimately undermine resilience if flow-on impacts are not fully considered. Furthermore, Kelly and Phelps (2019) and Phelps and Kelly (2020) highlight that resilience projects need to strongly incorporate social capital, especially actions that promote social connectedness and linking bottom-up solutions with top-down support.

Information Request 1

TNQ Hub strongly supports investment which will lead to more resilient agricultural industries and their communities irrespective of the climate change impact. Maintaining a focus on drought resilience in the context of future climate risks will have co-benefits for other impacts such as heatwaves, floods and bushfires. We acknowledge the need for specific disaster response arrangements as not every contingency can be planned for within a resilience framework. It should be noted that drought resilience, whether it be improving land condition, building financial reserves, or providing leadership training is most effectively enhanced during periods of more favourable rainfall and climate conditions. During extended drought it is important to minimise erosion of environmental, social and economic capitals. Hence, drought resilience is ongoing and applies to every phase of climatic cycles and changes.

Information Request 2

We suggest that a resilience perspective be included in the National Landcare and other Natural Resource Management programs to deliver mutually beneficial outcomes at farm, town, community, and regional scales.

Information Request 3

Social resilience is most successful when communities are treated as single entities rather than separate entities e.g., farmers/producers versus town people. It is important that the whole community has access to funded activities including supporting volunteer organisations activities (Rotary, Drought Angels etc), business advisory services (rural financial counsellors), business practices (education and extension services), sponsorship of events, leadership, community grants, philanthropic community projects, and community inclusiveness programs (pop up movies, drought relief concerts, community BBQ, support based field days etc). **The TNQ Hub believes that social benefit leads regions, communities, and farmers to stronger, better and readier resilience to changing climates. We recognise the importance of social benefits activities having a direct connection to resilience to climate challenges and agree that there**

should be strong and enduring value from the social benefit that supports economic and environmental resilience. This should be clearly articulated in the FDFs Theory of Change.

Information Request 4

The FDFs Theory of Change should clearly articulate the strategic priorities of economic, environmental and social resilience are mutually reinforcing, and explicitly how the FDF's activities aim to achieve these priorities in an integrated way. We suggest that the framework provided in Figure 1 be incorporated into program design.

Interim Recommendation 2: Establishing a drought and climate change resilience knowledge management system

Information Request 5

It is important that information developed out of Hub projects and activities is shared where its relevance is most likely to create the most impact. For example, open access publishing on university and state library systems, existing program knowledge sharing platforms e.g. FutureBeef and others. When developing the Knowledge sharing system, the Australian Government should ensure that the system focusses on accessibility (in places that are appropriate to content), collaboration (informed processes that guide a collaborative effort across Hubs), customisation (allowing for innovation in knowledge sharing e.g., video, audio files, multimodal approaches) and recognition (of the FDF Programs work, through the shared platform). Continuing to strengthen the national approach will lead to both transitional and transformational change but may require additional investment from the FDF. The FDF should fund and support a consumer-focused website that reports on current programs, provides links to relevant external information and is future ready to take advantage of emerging technologies such as artificial intelligence and machine learning.

Interim Recommendation 3: The role of the Regional Investment Corporation Board should be removed

TNQ Hubs supports streamlining processes whilst ensuring appropriate checks and balances are in place for the appropriate investment of public funds.

Interim Recommendation 4: The timing of Productivity Commission reviews should be changed

TNQ Hubs supports streamlining processes whilst ensuring appropriate checks and balances are in place for the appropriate reporting and review of the Drought Resilience Funding Plan.

Monitoring, evaluation, and learning

Interim Finding 4: Monitoring, evaluation and learning activities have not adequately tracked performance

The TNQ Hub considers the true success of the FDF will be determined through on-ground benefits to, and through, enhancing resilience. It is important to note that resilience is achieved in the medium to long-term. As also highlighted by the PC, short-term programs have high transaction costs, often with little return on public benefits or long-term gains. Some aspects of resilience such as improving soil health or land condition, may not be detected for a decade or longer. **Therefore, an overarching strategic plan that incorporates the next three funding cycles i.e., 12 years would be an appropriate planning horizon.** Equally, measuring and linking social benefits to enhanced resilience can be over similar timeframes. It is

imperative that the FDF takes a long term, strategic approach for the design, implementation and monitoring towards enhancing resilience.

Rural and regional Australian agricultural businesses, towns and communities may only have 10-15 years to build sufficient resilience to adapt to future drought and climatic impacts. Monitoring will need to rely on lead measures, validated during successive funding cycles, to ensure on-ground impacts are leading towards enhanced resilience. The risk of not delivering is reduced food security, degraded environments, and weaker communities across Australia. Positive results will contribute to a more secure future for all Australians.

We appreciate the findings of the Commission, that initial programs could have been improved through better coordination, a more considered delivery time frame and increased focus beyond short term objectives. Therefore, the Commissioner's findings for a clear, detailed strategy for long term investment priorities that address a changing climate and ensure that future programs reinforce each other is welcomed.

The TNQ Hub acknowledges and appreciates the changes made in response to early learnings. For example, the extending the length of time invested into trials such as the Drought Resilience Long-term Trials program enables experimentation of innovation to increase the capacity of farmers and improve knowledge sharing to support reduced exposure to drought risks, and improve economic, environmental, and social resilience to drought. The national network of Directors, Knowledge Brokers, Program Managers and Communications provides insight across Australia and lessons learned have informed learnings across all the regional Hubs. For example, in the TNQ Hub Region, both RDRP and FBRP have both been very successful. **Understanding regional, community and farm level contexts is critical to developing programs that result in stronger better and readier resilience.**

Information Request 6

The TNQ Hub supports clear requirements and guidelines for monitoring and evaluation and learning programs. The TNQ Hub recommends that all program outcomes, deliverables, monitoring and evaluation share the long-term goal of building drought resilience as outlined in Figure 1 and Table 1. Specifically, monitoring and evaluation should work backwards from the long-term goal to determine appropriate lead indicators to be validated and to make program adjustments as required towards achieving resilience.

There are a range of existing monitoring and evaluation frameworks which provide useful examples for short term but stepwise evaluation of longer-term impact. For example:

- Rolfe, Star & Curcio. (2020). Can extension programs improve grazing management in rangelands: a case study in Australia's Great Barrier Reef catchments. Available at <https://doi.org/10.1071/RJ20098>
- Rolfe *et al.* (2021). GrazingFutures: learnings from a contemporary collaborative extension program in rangeland communities of western Queensland, Australia. Available at <https://doi.org/10.1071/RJ20078>

Rolfe *et al.* (2020) provides economic frameworks to assist in the evaluation of investment of public funds into extension programs to achieve practice change. Rolfe *et al.* (2021) outlines lead indicators to evaluate longer-term practice change. We recommend taking an action research approach where lead indicators are validated and used to review progress towards longer-term targets so that projects can be modified to enhance outcomes over time.

Improving outcomes for Aboriginal and Torres Strait Islander people

Interim Finding 5: Aboriginal and Torres Strait Islander people have had limited participation in the Future Drought Fund

The TNQ Hub supports the more explicit recognition of building resilience to climate change and acknowledges that reference to climate change already exists in the Funding Plan Vision. Recognising different terminology for 'drought' is more inclusive, particularly for Indigenous communities, where the changing seasons help communicate their connection to the use and management of Country. It is also important to be discussing resilience or livelihoods more broadly with Aboriginal and Torres Strait Islander people.

Information Request 8

The TNQ Hub can see merit in establishing and contributing to a FDF Aboriginal and Torres Strait Islander working group to work with the Department to improve the design and implementation of the fund. The working group should pay particular attention to not create an inflexible national structure. While we recognise that it will be difficult to represent the interests of every Indigenous group across Australia. We think that to be successful the working group should include Aboriginal and/or Torres Strait Islander and Hub representation so that an FDF Aboriginal and Torres Strait Islander strategy can develop through a co-designed learning activity.

The TNQ Hub strongly supports the inclusion of a dedicated funding stream that provides opportunities and benefits to Aboriginal and Torres Strait Islander peoples. There should be a focus on the development of meaningful partnerships with Indigenous organisations with accountability to the MEL framework. The TNQ Hub supports the suggestion of flexibility around grant criteria for indigenous communities and projects. In addition, we recommend consideration also be given to other communities that link to remoteness, capacity, and future risk.

Interim finding 6: Investing in climate information services is appropriate, but funding two overlapping tools may be unnecessary

Information Request 9

The TNQ Hub strongly supports investment into maintaining and improving access to climate data and information services that improve the ability to plan for future drought risks. For example, the [Queensland Future Climate Dashboard](#) provides a platform for planning by individual farmers, Local Governments, regional economic development organisations, Natural Resource Management Groups, State Agencies, industry groups and others. Equally, the TNQ Hub supports improvements in short-term weather forecasts and medium to long-term outlooks that assist tactical decision making. Both are required to enhance resilience and improve the adaptive capacity of the agricultural sector.

To help achieve these improvements, the TNQ Hub has strived to connect stakeholders providing existing climate services groups with the Climate Services for Agriculture (CSA) project team. This has enabled the CSA team to better define how the tool would be used to identify long-term climate-related conditions and provide insights that are location specific and commodity relevant. It also allowed the CSA team to take early learnings and apply them nationally to quickly pivot the tool to meet consumer needs.

However, there are a range of existing or recently completed programs and projects that should also be considered in the context of continued FDF investment into integrated climate and weather services. Some examples include:

- Queensland Department of Environment and Science (DES) LongPaddock climate reports and pasture alerts
- DES Nationally available SILO data, which is essential for simulation modelling of future climate and drought scenarios across a range of agricultural industries
- DES Nationally available AussieGRASS data
- The UniSQ led Queensland Drought Mitigation Centre which has global linkages through University partnerships and involvement in the UN and WMO
- The UniSQ led Northern Australia Climate Program, which delivers services across Queensland, the NT and WA, provides an model for extension and climate services nationally
- The *'Forewarned is forearmed: equipping farmers and agricultural value chains to proactively manage the impacts of extreme climate events'* Bureau of Meteorology, cross-University and industry collaborative project
- The *'Managing Climate Variability'* project and associated Climate Kelpie products and website
- The Queensland Drought and Climate Adaptation Program, specifically projects which translate climate data and weather forecasts into on-ground decisions (e.g. *'The Use of Bureau of Meteorology Multi-Week and Seasonal Forecasts to Facilitate Improved Management Decisions in Queensland's Vegetable Industry'*)
- The NESP Climate Systems Hub
- The Bureau of Meteorology *'Water and the Land'* web site and associated modelling and data

Given the large number of existing providers, tools and services, the TNQ Hub supports a strategic approach to climate investment that maximises collaboration between key service providers. This could include establishing a National multi-disciplinary technical working group, forums, or other mechanisms to ensure opportunities for integrated services are maximised. Codesigned programs between key providers and stakeholders is likely to provide better investment of public funds than competitive grants in this busy area.

The TNQ Hub supports the continuation of CSA in the context of re-evaluating gaps in science and service delivery through collaboration and co-design for continued FDF investment.

The TNQ Hub supports the **concept** of DR SAT, but does not support its continuation, or the incorporation of elements of the current DR SAT website, into other services.

Interim finding 7: The Farm Business Resilience program has untapped potential for delivering public benefits

The TNQ Hub works closely with the Farm Business Resilience Plan (FBRP) delivery partners who work with producers and farmers to understand their people, production, business, natural resource management and climate impacts. In Queensland the FBRP process is implementing a whole-of-business approach which includes resource sustainability, business systems and building human capacity. This builds on previous successful programs (Rolfe *et al.* 2021; GrazingFutures: learnings from a contemporary collaborative extension program in rangeland communities of western Queensland, Australia; available at <https://doi.org/10.1071/RJ20078>) and aims to deliver substantive public benefits whilst simultaneously improving farm business outcomes.

We would encourage the future development of RDRP and Drought Hubs to consider and build upon the approach taken in building strong partnerships with Indigenous Councils, nations, and businesses. In both cases, the RDRP and TNQ Drought Hub have been standing beside, supporting and investing in these defined Indigenous institutions, resulting improved governing and planning capacity and improved resilience across these scale. **We encourage the Commission to reach out to us further in considering these issues within their final recommendations.**

Information Request 10

In addition to on-farm public good through enhancing resource sustainability, net public benefits from improving producer resilience have a positive effect on community resilience. For example, at the community level, improved farming landscapes through better natural resource management may result in increased income, business resilience, employment opportunities, in-migration, increased volunteerism, increased liveability, and increased asset value. Positive environmental benefits flow into greater soil health, increased water use efficiency, reduced loss of pasture and better protected biodiversity and ecosystem services. **For positive flow on benefits to be realised, better program design, longer-term funding cycles and increased investment into co-designed activities are needed to assist programs to have longer lasting impacts, increasing the chances of transformational change.**

Interim finding 8: Regional Drought Resilience Plans could be improved

Information Request 11

The TNQ Hub believes there is value in the Regional Drought Resilience Plans (RDRP). In the TNQ Hub region, the plans have achieved a coherent focus on what drought means to a region or place through collaboration with a diverse group of stakeholders. The plans have identified key regional priorities for action in the short, medium, and long term. We agree that implementation has been affected by sub optimal integration and sequencing and limited funding. The TNQ Hub region plans are linked to other regional initiatives to avoid confusion and to create greater impact that will lead to tangible outcomes.

We suggest that the RDRP plans be completed across Australia. Plans that have not commenced should ensure they are explicitly considering FDF funding or other funding sources to support the implementation of those programs. The TNQ Hub suggests that once completed, all the plans be assessed by a Resilience Working Group that reports to parliament, to consider how implementation can be supported. We believe the RDRP program will be improved with suitable governance mechanisms and public reporting.

Interim finding 9: There is scope to improve the Drought Resilience Adoption and Innovation Hubs

We agree that stakeholders have been uncertain about the role of the Hubs. Firstly, this in part can be aligned to initial recruitment of stakeholders who supplied expressions of interest without both parties fully understanding how their services would be integrated into the Hubs work. In some cases, there is no direct link to the services offered and as such, no way to deliver on the stakeholder's commitment. Secondly, due to the late commencement of the Hubs, we have not had the opportunity to engage with the stakeholders beyond initial co-design of the programs. We would welcome the opportunity to participate in a co-designed statement of expectations and a whole of Hubs MEL Plan.

Interim recommendation 5: Improving the Drought Resilience Adoption and Innovation Hubs

The TNQ Hub welcomes the recommendation to extend the Hubs and is pleased that the Hubs provide a valuable regional presence. We believe that the Hubs need to play a lead role in defining what the expectations of the Hubs should be.

Interim Finding 10: The role of Drought Resilience Innovation Grants

Information Request 12

Investment into ag innovation is essential to building resilience and becoming more adaptive. While the role of the Drought Resilience Innovation Grants requires clarity, the continued use of Hubs provides a vehicle for strengthening regional ecosystems of research, innovation, education, and business development. Should the program move towards more targeted grants, they should be clearly linked to regional priorities and matched to regionally identified resilience challenges.

Interim finding 11: There are issues with relevance, overlap and measurement of the Better Prepared Communities programs

The FDF should not try to support all community resilient activities but should be strategic and targeted to contribute to social capital and support communities to build resilience for drought and to get through drought. TNQ Hub has a strong focus on leadership programs and encouraging youth to engage in agriculture and their communities. We support investment into leadership programs for the betterment of communities with the aim of delivering long-term resilience.

Information Request 13

The TNQ Hub anticipates that during the next extended drought, communities and the public will perceive the Drought Resilience Hubs as coordinators of drought relief funds and services. Whilst this is not an intended role of the TNQ Hub we acknowledge that being able to provide some support and direct people towards services could be a valued and important role. There is a risk if the TNQ Hub is unable to provide any level of service or support, we will be seen as irrelevant and unhelpful. This may be a risk to the FDF which considered in the design of the next funding phase. Where FDF support and services contribute to maintaining social connectivity and social capital at the same time as providing valued relief during drought, this may be a strategic co-benefit.

The TNQ Hub strongly supports the inclusion of social benefits. Activities that promote social benefit often have enhanced impact on resilience including increased mental health, flow on benefits including increased employment and improved services and increased social connectedness that support local town business and community. As drought increases, economic impacts increase which have a flow on effect to cash flow, which in turn affects employment, creates population decline, poor services and infrastructure, and a decline in social life and volunteering. As the drought worsens, physical and mental health services decline leading to greater instability and intensified impacts on people. Reduced resilience leads to negative impacts and decline in personal satisfaction. A lack of discretionary funds, exhaustion from working long hours (because they can no longer afford staff), negativity and feeling unsociable often result in a lack of enthusiasm to invest time into other programs, social activities, and volunteering. As such, events like local shows, sporting clubs and other social activities decline. As social activities decline communities become less attractive creating a socioeconomic spiral that results in reduced population and ultimately, the loss of communities supporting agribusiness. There needs to be a balance between environmental, economic, and social investments. Should the focus be only on economic and environmental activities, there may not be the energy or the financial capacity to create a

positive spill over of social benefit to the ag industry and its communities. Regardless of the investment into social, environmental, and economic benefit, the activities should clearly demonstrate impact. The outcomes should be monitored, evaluated, and reported through the theory of change, program logics and MEL frameworks.

Attachments

- Kelly, Dana (2018). *Beyond the Dust. Impact of Drought on Town Businesses in Central West Queensland and some solutions.* Published by the Western Queensland Drought Committee. Available from <http://wqda.org.au/beyond-the-dust/>
- Kelly, Dana and Phelps, David (2019). *Looking beyond the D.U.S.T. – building resilient rangeland communities.* Available from <https://doi.org/10.1071/RJ18047>
- Phelps, David and Kelly, Dana (2019). *Overcoming drought vulnerability in rangeland communities: lessons from central-western Queensland.* Available from <https://doi.org/10.1071/RJ18052>
- Phelps, David and Kelly, Dana (2020). *A call for collaboration: linking local and non-local rangeland communities to build resilience.* Available from <https://doi.org/10.1071/RJ20048>