



Enhancing climate resilience through the NACP extension service

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Abstract

The Northern Australian Climate Program (NACP) extension service delivers workshops, field day talks, property visits, and webinars to provide the support and confidence for regional producers to use weather and climate information in decision making. This service helps producers to make more informed assessments of climate forecasts and understand the factors that can influence their specific region in the days, weeks, and months ahead.

Integration between research, development and extension allows for the most relevant and up-to-date climate information to be used in the field to meet end-user needs, and for industry feedback to further inform the program's activities for the benefit of agricultural communities. This iterative model has proven very successful in Australia, as evidenced by the industry funding of the third NACP program (NACP3). One of the main measurements of the success of the program and its impact on producers is meeting Category C goals, which describe the number of practice changes (189 to date) resulting from timely and effective use of the NACP extension and adoption service.

We highlight how the NACP extension service is helping the grazing industry to manage drought and climate risk in northern Australia by improving weather and climate awareness, improving knowledge and skills, providing support and confidence to use this in decision making, and delivering practice change to reduce climate risk and drive positive financial, environmental and social outcomes.

Introduction

The Northern Australia Climate Program (NACP) delivers innovative climate research, product development and targeted extension outcomes to improve the capacity of the red meat industry in managing drought and climate risk across northern Australia. NACP extension and adoption activities are undertaken by regionally located extension officers called Climate Mates, who are leaders in their local community with extensive networks and knowledge of the local industries. Climate Mates are selected for their capacity to communicate with industry and community, and thus they have a unique role to improve the use of weather and climate forecasts through training and engaging with agricultural producers, natural resource managers, advisors and supporting the broader extension teams in the regions. Supported by climatological experts to understand contemporaneous climate forecasting for use within the NACP extension program, Climate Mates take feedback received from clients and communicate it to project partners at the University of Southern Queensland and Bureau of Meteorology to aid in the focus of research and development tools.

Methods

The NACP extension and adoption service integrates and embeds climate forecast information into industry and community networks to improve resilience to weather-climate variability, extremes and change. The program works to:

- Deliver a climate service to producers and graziers across northern Australia
- Facilitate practice change and related decision making by working with stakeholders one-on-one
- Document practice change by providing metrics that meet a triple bottom line (economic, environment, social)
- Facilitate two-way communication with researchers to improve both the relevance of research-driven products and the uptake of forecast information by industry and community
- Seek industry advice on climate needs and product development
- Develop linkages between agriculture producers, natural resource managers, advisers and key supply chain stakeholders to drive adoption of best practice weather/climate management strategies

NACP extension and adoption is modelled on the ‘staircase of engagement’ (Figure 1; Hewitt et al. 2017, Lavender et al. 2022), which provides a valuable framework for planning, implementing and evaluating the extension activities. Through this, Climate Mates are tasked with achieving key performance indicator targets relating to delivery of awareness (Category A), change in knowledge, attitude, skills, aspirations (KASA; Category B), change in practice (Category C) and demonstrating impact (Category D). Awareness is achieved through passive engagement by providing information, usually through quick presentations, newsletters, websites and tools, and a change in KASA comes through providing dialogue-based activities often in interactive groups such as workshops. A change in practice (e.g. adoption of climate forecasts to inform decision-making) necessitates active engagement with tailored and targeted discussions and focused relationships, often through face-to-face interaction between Climate Mates and producers. Climate Mates record each Category A, B and C outcome using a Customer Relationship Management platform, which enables results to be tallied around the engagement of producers with our educational resources and regional climate information.

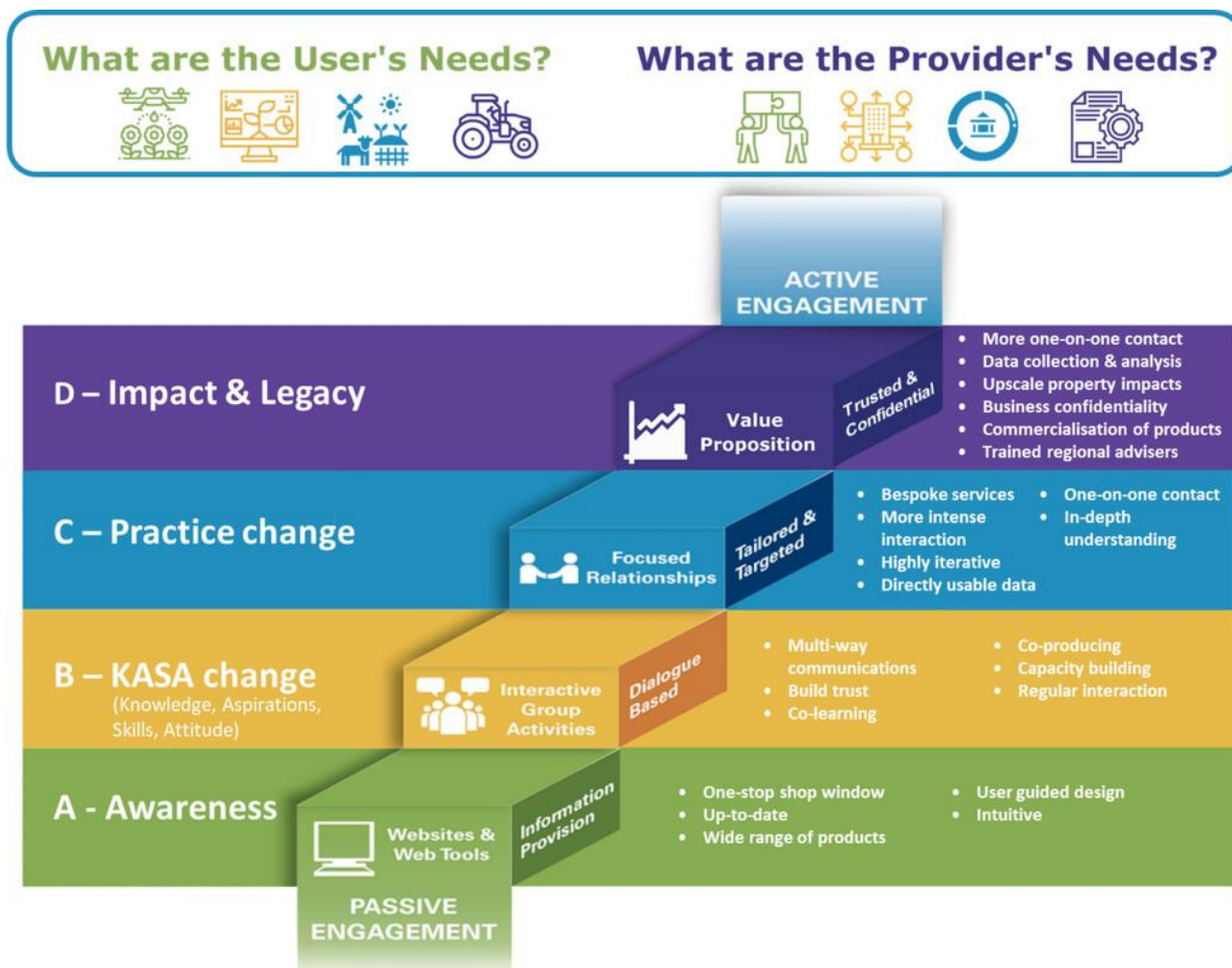


Figure 1: Schematic of four broad categories of NACP engagement with primary producers, adapted with permission from Hewitt et al. (2017).

Results

NACP incorporates robust monitoring, evaluation, and learning activities with tailored extension and adoption services that have been built around:

Category A goals: Producers have improved awareness of NACP, its aims and benefits for Australian agricultural industries, commodities, and stakeholders through the provision of web-based drought information and tools.

Category B goals: Producers have improved knowledge, aspirations, skills and attitudes in the use of forecast products and tailored information for effective decision making.

- Climate Mates have provided ongoing training to producers in interpreting drought and climate forecasts and information demonstrating climate resilience.
- Regular communication between stakeholders and Climate Mates has built knowledge, confidence, and trust around forecasts tools, and the capacity of producers and graziers to use that knowledge to maximise climate resilience. This has led to increased uptake and improved interpretation of forecast products, and improved trust and confidence in Bureau of Meteorology forecasts and services.

- The NACP extension and adoption service, tailored to each region, has been dialogue based and built around interactive group activities; workshops, field days, training sessions, online demonstrations, property visits, agricultural shows, and regular email updates. This direct engagement has fostered transformational change across various levels (property, community, regional) and enhanced the integration, coordination, and sustainability of climate resilience practices.

Category C goals: Practice change has resulted from timely, effective use of the extension and adoption service.

- Personalised and focussed one-on-one interactions between producers and Climate Mates have led to effective uptake of climate products in operational and strategic decision-making and improved economic, environmental, and social outcomes.
- Measures of practice change have also included the extent to which stakeholders and industry are incorporating the NACP extension and adoption service in their decision-making, and the observed strategic changes in enterprises that arise from the service.

Category D goals (in progress): Impact and Legacy

- Centred on the core principles of confidence and trust in climate knowledge and forecast information, this is measuring the improved capacity of producers to be resilient, sustainable, productive, and profitable by using the NACP extension and adoption service in decision making.
- Case studies are providing a comprehensive understanding of how informed decision-making impacts natural resource management on properties, enhancing climate resilience, and improving the project's overall capacity.

All Category data has been managed using a Customer Relationship Management platform to capture, manage, and report on producer engagement, adoption, practice change, and project milestones. To date, NACP3 (2022-present) has delivered 11,941 Category A, 4,291 Category B, and 189 Category C outcomes for producers, exceeding those achieved in NACP2 (2018-2022; Lavender et al. 2022). Importantly, Category C outcomes in three years of NACP3 are already 126% of those achieved in the four years of NACP2 (150 Category C outcomes), demonstrating growth and interest in the use of the program across northern Australia.

Category A, B, C, and D outcomes are assessed through feedback from community, industry, and advisors via emails, reports, surveys, and stakeholder interviews. This monitoring, evaluation, and learning framework has demonstrated its capacity to drive significant behavioural changes and foster greater trust and confidence in climate forecasts among producers.

The NACP website highlights several case studies that illustrate how on-property decision making has benefitted from the use of climate information delivered through the program's extension service (https://nacp.org.au/outreaches/case_studies). For example, producers in Batchelor NT (south of Darwin) have gained a greater understanding, confidence and trust in forecast information from participating in face-to-face training sessions with the regional Climate Mate and extension program coordinator. This has resulted in lower stress, more informed decision making, and better outcomes that include improving the land through revegetation works, weed and erosion control (Category C). This is helping to balance social, economic, and environmental considerations for their business (Category D).

Conclusions

Delivered across northern Australia, the NACP extension and adoption service provides region-specific information through Climate Mates; extension officers with local knowledge, landscape management expertise, and commodity-specific connections.

NACP incorporates robust monitoring, evaluation, and learning activities with tailored extension and adoption services that are built around awareness (Category A), change in KASA (Category B), practice change (Category C) and demonstrating impact (Category D).

The tailored extension and adoption service is utilising existing monitoring and forecast products to help the northern Australian red meat industry make proactive decisions to minimise the economic, social, and environmental losses associated with climate variability and extremes in the days, weeks, and months ahead.

Drawing on the success of the program, future directions may include adapting the NACP model to other farming regions and commodities in livestock and horticulture, with a key focus on planning and preparedness for building drought and climate resilience across Australia.

Acknowledgements

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