Case studies point to research use

Brenda Leahy, Australasian Fire and Emergency Service Authorities Council

How do emergency services in Australia and New Zealand use research to drive change and innovation? What works, what doesn't and what gets in the way?

A series of case studies, published by the Australasian Fire and Emergency Service Authorities Council (AFAC), provide first-hand insights from researchers and end-users on their experiences of using research in policy and practice in emergency management.

The series tracks and documents how fire and land management agencies both shaped and used research-based outputs from the former Bushfire CRC and current Bushfire and Natural Hazards CRC. Significantly, they capture and share first-hand insights by and for end-users from fire and emergency services.

AFAC members and CRC researchers shared their experiences and understanding on the factors critical to successful utilisation, together with the barriers they faced and overcame in developing and implementing the CRC science-based outputs and resources.

A total of 10 case studies[1] were published between June 2015 and December 2017, each reporting on different examples of research utilisation across the spectrum of science and research, including interpreting fire weather and fire behaviour, managing operations, bushfire and community education, human factors and incident management and land management.

While many of the cases use research conducted in a bushfire context, the findings are applicable to utilisation of research in all hazard contexts.

Each case study confirms that the journey from research to utilisation is different for every end-user due to a range of factors, such as their unique operating contexts and their changing needs and priorities due to operational demands or shifts in policy, practice and resourcing.

There were, however, a number of common themes shared by the researchers and end-users in the critical success factors and in their reflections on the barriers and opportunities. These have provided useful clues on what it takes to use research effectively in contemporary emergency management policy and practice.

These factors generally relate to the capabilities of people (individuals, project groups, teams or multi-agency task forces) to:

- understand, evaluate, translate and communicate the impact of research and its utilisation in emergency management policy and practice
- contribute to collaborative development of practical research-based outputs for use by fire and emergency services
- identify, use or cultivate relevant stakeholders, relationships and networks (for example within AFAC and the CRC) to facilitate and guide research utilisation projects from concept to use.

They also relate to structural or agency-organisational factors, such as strategies, systems and processes, resourcing and policies and their degree of maturity in enabling or supporting change or innovation through adoption and implementation of the research outputs.

At the high level, some of the key themes to emerge in the critical success factors were to:

- understand the end-user problem needs and operating contexts
- understand and agree upfront on the research questions, plan, approach and utilisation deliverables
- consult and engage end users and stakeholders end-to-end from research concept to implementation
- leverage the established stakeholder representative and advisory groups in AFAC's collaboration model to help facilitate utilisation, interpret and translate research findings for policy and practice and evaluate impact and implications for its membership
- provide practical guidance, learner resources, tools and professional development or training for end-users to build understanding and support implementation.

Specific learnings from the cases are summarised in Table 1. These highlight the value of understanding the challenges and opportunities of using research, especially from an end-user perspective, and complement the findings of the ongoing Research Utilisation Report on surveys of AFAC and CRC membership. Further information on the survey can be found at https://www.afac.com.au/initiative/research.

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1   These are available for download at the AFAC website www.afac.com.au/initiative/research.

Table 1: Research utilisation critical success factors identified from case studies.

Case study	Research focus	Utilisation outputs	Critical success factors
Research strengthens leadership, learning and development pathways for incident management.	Incident management, leadership and capability development, human factors.	EMPS capabilities for incident management and professional standards. Guidance for continuing professional development.	• Use the CRC research evidence and outputs. • Ensure collaborative development between researchers and end-users. • Provide guidance resources for end-user implementation and operationalisation.
Learning lessons from research insights.	Understanding factors contributing to survival and fatalities from Black Saturday.	National research-based guidance for key messaging for catastrophic bushfires.	• Leverage the AFAC collaboration process. • Build trusting relationships among key stakeholders. • Prioritise learning from lessons from research insights.
Human factors research evidence enhances AIIMS incident management capability.	Human factors research, decision-making, worst case scenarios, incident management, leadership.	Embedded in AIIMS 2017 and related learner resources.	• Make research evidence accessible and meaningful. • Actively engage, involve and inform end-users. • Provide professional development opportunities. • Expect indirect and different routes to utilisation.
Science-backed tools enhance water catchment management.	Fire in the landscape, post-fire soil erosion.	Tools to help end-users identify water catchments susceptible to post-fire soil erosion, flooding and water quality risks.	• Build strong researcher and end-user partnerships from the outset. • Understand the research, scientific approach, findings and the practical implications, benefits and limitations. • Collaborate with stakeholders nationally through AFAC.
Li'l Larikkins - Bushfire Safety Stories for Kids.	Bushfire education for school-age children.	Guidance on bushfire education for primary school-age children nationally.	• Get end-users involved in the project as early as possible. • Research utilisation equals relationships. • Be flexible – turn obstacles into opportunities. • Practice the 3 Ps – persistence, pragmatism and patience.
Multi-agency trial project accelerates evidence-based aerial suppression practice.	Managing operational response.	Evidence-based procedure developed by multi-agency task force for rapid aircraft dispatch in Victoria.	• Ensure industry needs drive the research plan and process. • Make sense of the science. • Tailor communications to maximise understanding and uptake. • Consider a trial/pilot or similar mechanism to determine the scope for application and impact. • Support and resource implementation and practice change.
Taking charge of risk networking towards resilience.	Community engagement, bushfire education, resilience.	Engagement tool developed from research method to connect and prepare communities for bushfire.	• Start with the end in mind. Who needs it? • Provide practical skills and tools and offer hands-on experiences. • Embed the research into professional development and training. • Communicate far and wide.
Bushfire ready neighbourhoods: from informed and aware to engaged and prepared.	Community engagement, preparedness, resilience, risk.	Action research guides agency-wide framework and approach to community development.	• A clear need to improve their approach to community education. • A collaborative action-research method that built trust and shared understanding of the context. • A commitment to re-engineer existing processes and practices to support implementation.
Partnership improves fire weather forecasting.	Weather forecasting, extreme fire weather.	Fire weather science embedded in Bureau of Meteorology national training.	• An organisational commitment to identify, address and anticipate knowledge gaps. • A focus on developing relationships with researchers to stay ahead of the science. • A priority on interpreting complex science for operations.
Managing fire in Mallee heath: from research to practice.	Fire behaviour prediction in Mallee heath.	User guidance for managing fire in Mallee heath.	• Start by asking your end-users: 'What do you need?' • Foster relationships – focus on good communications. • Convert complex science into user-friendly tools. • Apply a funding model that suits your project.