MAKING COMMUNITIES MORE RESILIENT TO CLIMATE CHANGE (CRCC) PROGRAM OUTCOME EVALUATION FINAL REPORT

Prepared for NSW DPE

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Clear Horizon

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Dictionary

Acronyms	Description
CAS	Climate and Atmospheric Science Branch
CALSO	Climate Adaptation Land Sector and Opportunities
CCF	Climate Change Fund
CRANZE	Climate Resilience and Net Zero Emissions Branch
CRCC	Making Communities More Resilient to Climate Change
DPE/Department	The NSW Department of Planning and Environment and former relevant entities
KEQ	Key Evaluation Question
ERA	Enabling Regional Adaptation

IRCC	Increasing Resilience to Climate Change
LALC	Local Aboriginal Land Councils
LGA	Local Government Area
LGNSW	Local Government New South Wales
MERI	Monitoring, Evaluation, Reporting and Improvement
NARCliM	NSW and Australian Regional Climate Modelling
OECC	Office of Energy and Climate Change
SES	Strategic Evaluation and Statistics Unit
TCFDS	Taskforce for Climate-related Financial Disclosure Statements
XDI	Cross-Dependency Initiative

EXECUTIVE SUMMARY

This report presents the **Outcome Evaluation** for the **Making Communities More Resilient to Climate Change** (CRCC) Program (the Program), which ran from January 2018 to June 2022. This Program was funded under the NSW Climate Change Fund (CCF). The evaluation was delivered in line with the CRCC Program Evaluation Plan (2020) and associated addendums.

About the CRCC Program

Program objectives

The CRCC Program aimed to improve the climate change resilience of communities, governments, and businesses by delivering climate information, climate risk and adaptation support, and financial support.

Program delivery

The CRCC Program was delivered through a partnership between two DPIE Directorates - Climate and Atmospheric Science (CAS) and Climate Resilience and Net Zero Emissions (CRANZE) (renamed Climate Adaptation Land Sector and Opportunities (CALSO) in 2021). The Program delivered projects under three streams - Tools and Information, Adaptation Support, and Funding, summarised in Table 1.

Table 1 Projects delivered under the CRCC program streams

Tools and Information	Adaptation Support	Funding
- Climate data portal - Natural hazard maps and reports - Climate ready revegetation - NARCliM - XDI - AdaptNSW website	- Enabling regional adaptation - Climate risk ready - Aboriginal adaptation - AdaptNSW forum and webinars	Increasing Resilience to Climate Change (IRCC) council and community grants

The following Program principles guided the delivery of the projects:

- We do the right science
- We transform this into the right information
- We provide this to the right people
- We provide it at the right time
- We provide it in the right format

About the evaluation

Evaluation purpose and scope

The primary purpose of this evaluation was to test the effectiveness of the Program in achieving its intended outcomes and assess the extent to which the Program principles were applied through the projects. Findings from this evaluation will inform improvements to ongoing CRCC projects and other similar projects. The evaluation scope covered the projects outlined in Table 1.

Evaluation methodology

The evaluation is based on the Program's theory of change, principles, key evaluation questions (KEQs) and evaluation rubrics developed in the Helping Communities Become More Resilient to Climate Change Facilitated Review (CRCC Facilitated Review) (Clear Horizon 2022).

Data collection for this evaluation included a detailed review of existing documentation and data and semi-structured interviews with Program staff and end-users.

Data analysis and synthesis included data triangulation from different sources and against the KEQs. Findings and evidence were presented in participatory workshops, where results were discussed, and relevant and practical recommendations were identified.

The workshop feedback was integrated into this evaluation report. To highlight the key evaluation findings, this report re-grouped evidence under three main sections: Overall Program Performance, Program Outcomes, and Program Adherence to Principles.

Intended audience

The primary audiences of this evaluation are the CRCC Program teams and their management.

Limitations

- While the interviews provided a good indication of a range of views, they did not represent the views of all stakeholders.

- The availability of relevant data and insights varied across projects, limiting the extent to which evaluative judgements could be made.

- The Program's theory of change and key evaluation questions were revised in June 2022. At the time of the evaluation, this thinking had not been translated into the Program's design nor the collection of monitoring data. This limited the availability of relevant data or the ability of interviewees to provide insights into the Program's contribution to intended outcomes.

- The evaluation drew on the State Agency Preparedness Survey results (NSW Government 2023) to understand the scale of impact of some CRCC projects (Climate Data Portal, Climate Risk Ready, XDI, AdaptNSW website). This survey was conducted by the Office of Energy and Climate Change (OECC) and was not explicitly designed for this evaluation. Therefore, the evaluation only used the survey results that could be directly correlated with the CRCC program.

Summary of key findings

Contextual considerations

As found in the Helping Communities Become More Resilient to Climate Change Program Mid-Term Evaluation (Program Mid-Term Evaluation) (Clear Horizon 2020), the CRCC Program lacked an overarching Program plan. Despite additional work undertaken to establish a theory of change and KEQs in 2022, the absence of a Program plan describing the targeted end-users and their needs and the distribution of available resources across projects made evaluating the Program challenging.

The Program was set in the context of an evolving community of practice around managing climate risk in NSW and Australia. Factors such as COVID-19, changes in community sentiment towards climate change, extreme weather events including the 2019-20 Black Summer Bushfires, and 2021 and 2022 flooding likely impacted Program delivery. These led to public inquiries into managing these risks, including the Managing Climate Risks to Assets and Services (the Audit) (Audit Office of NSW 2021). This Audit included an investigation of some of the projects under this Program. While the Audit has been used as a data source for this evaluation, the influence of the Audit and the other contextual considerations mentioned above on the Program were beyond the scope of the evaluation.

Achievement of outcomes

The CRCC Program contributed to its overarching outcome of 'government, businesses, households, and the community manage risks posed by climate change and extreme weather events' by establishing central foundations for climate risk management, including climate risk and adaptation information, support and capacity building, and financial support.

The development and dissemination of tools, information, and support contributed to building knowledge and capability for climate risk management and to instances of climate risk becoming better embedded into decision-making. However, the lack of a coordinated, strategic approach to Program design and delivery limited the scale and, likely, the sustainability of these achievements. Through the Climate Risk Ready project and the development of the Climate Risk & Resilience Strategic Roadmap, the Program contributed to improving the high-level authorising environment and governance for climate risk management, which may contribute to more widespread, strategic, and sustainable changes in climate risk management in the future.

Through the provision of funding to councils and community groups, the Program facilitated the implementation of 53 on-ground projects to address climate risk. While the grants successfully helped remove a funding barrier, remaining resource constraints (staff, funding) posed limits to the impact of these projects. Resourcing was surfaced as an ongoing barrier to councils and communities making changes to address climate risks.

The Program also contributed to three key unintended outcomes. This included encouraging culturally safe work practices leading to increased practice of culture on Country and providing support for the development of Taskforce for Climate-related Financial Disclosure Statements. Finally, the Program fostered collaboration opportunities and networks for climate adaptation planning, which may support the establishment of a more coordinated approach to climate risk management in the future.

Table 2 summarises the instances of impact on decision-making and climate risk management that the Program contributed to.

Table 2 Program's instances of impact on decision-making and climate risk management

Project	Instances of impact
Tools and Information	
XDI	• **9 government agencies** commonly used XDI to assess climate change risks (State Agency Preparedness Survey, NSW Government 2023, n=75). • The NSW Asset and Liabilities Committee (ALCO), NSW Treasury Intergenerational Report, and Infrastructure NSW and Infrastructure Australia incorporated climate risk metrics into their reporting based on XDI. • Sydney Water, NBN Co, Department of Communities and Justice, and the NSW Government's housing portfolio used XDI for asset management and planning.
Climate Ready Revegetation	• **Three Climate Ready Revegetation Trial groups** participated in revegetation projects based on the Climate Ready Revegetation Guide.
NARCliM and Climate Data Portal	• **15 government agencies** commonly used the Climate Data Portal to assess climate change risks (State Agency Preparedness Survey, NSW Government 2023, n=75). • Interviewees from **the water, transport, conservation, and bushfire risk sectors** used NARCliM data for climate risk decision-making.
AdaptNSW website	• **39 government agencies** regularly used the AdaptNSW website as guidance material to assist with climate change risk assessment, management, or adaptation work (State Agency Preparedness Survey, NSW Government 2023, n=75). • Two interviewees spoke about using the website for climate adaptation work.
Adaptation Support	
Aboriginal Adaptation	• **Three Aboriginal communities** felt already better equipped to manage and adapt to risks posed by climate change as a result of the Aboriginal Adaptation work in progress. Not only can Aboriginal communities continue to practice traditional cultural practices; they are better placed to respond to the effects of climate change and extreme weather events in their community.
Climate Risk Ready	• **60 government agencies** accessed the Climate Risk Ready NSW Guide as guidance material to assist with climate change risk assessment, management, or adaptation. 41 of the 60 accessed it regularly (State Agency Preparedness Survey, NSW Government 2023, n=75). • **54 government agencies** accessed the Climate Risk Ready Training Course as guidance material to assist with climate change risk assessment, management, or adaptation. 39 of the 54 accessed

Project	Instances of impact
	it regularly (State Agency Preparedness Survey, NSW Government 2023, n=75).
Funding	
IRCC grants	• 32 **councils** and 23 **community groups** implemented projects contributing to climate change management and adaption. • One program team member suggested that some council projects had flow-on effects on other councils.

Adherence to Program Principles

The CRCC Program was informed by five principles that suggested how to 'deliver the Program right' to achieve outcomes. Individually, the projects were generally successful in adhering to the Program principles:

- The Program adhered to the '**we do the right science**' principle. Projects were based on the most up-to-date science at the time of development, and a continuous improvement mindset helped ensure that scientific foundations stayed robust.

- The extent to which the principle of '**we transform this into the right information**' was adhered to varied depending on the project. The information provided met the needs of some users but not for all users essential to climate risk management. Information also did not necessarily encourage implementation. The absence of an overarching Program plan outlining a coordinated approach to meeting information needs made it challenging for CRCC projects to complement each other in meeting information needs.

- The extent to which the principle of '**we provide this to the right people**' was adhered to varied across projects. The 'right users' were not always defined with sufficient detail, and the definition of the 'right users' was evolving. While there were examples of relevant end-users accessing the projects, there was no substantive evidence of projects reaching 'decision-makers' with the power to embed climate risk into decision-making in a sustainable manner. The grant process could also have been set up to reach users with more acute needs and who will have a more substantive impact.

- The Program adhered to the '**we provide it at the right time**' principle. Most end-users could progress their work without the projects but were pleased when the projects were delivered as they helped the quality of their work.

- The extent to which the principle of '**we provide it in the right format**' was adhered to varied across projects. End-users were generally satisfied with the format but suggested several improvements, so the projects could better meet their needs.

Recommendations

1. Actively map and engage end-users in the strategic design, delivery, and evaluation of climate adaptation projects.

   The evaluation found the CRCC projects did not have a sufficiently detailed and documented description of their target end-users and associated needs. This limited the robustness of the evaluation of the effectiveness of each of the projects, as evidence of intended and actual use of information was either limited or absent. By actively mapping and engaging end-users throughout the design, delivery and evaluation of projects, there is greater opportunity to ensure the projects

are effectively influencing intended outcomes (i.e., changes in knowledge, skills, behaviour and/or decision-making as opposed to just 'reach'), and that end-users are engaged in informing the continuous improvement of projects throughout delivery.

2. Ensure strategic whole-of-Program governance and coordination is facilitating collaboration across projects and departments for greater impact.

    The evaluation found that while the individual projects delivered important foundational work for climate risk management, the absence of strategic Program-level governance and coordination limited collaboration across the projects and the associated impact of these projects. Strategic Program-level governance and coordination should focus on ensuring consistency, alignment and integration of project design and delivery across departments (including in end-user and stakeholder mapping and engagement as outlined in Recommendation 1). This will enable the whole-of-program level outcomes to be achieved.

3. Establish robust project and Program-level MERI.

    The ability of the evaluation to make robust judgements of effectiveness was limited by both a lack of routine project and Program level monitoring data, and the ability of project and Program staff to identify sources or stakeholders to fill these data gaps at the point of the evaluation. Project-level MERI should:

    - be integrated into project planning and delivery as part of best practice project management
    - primarily focus on capturing and using information to inform continuous learning and adaptation to ensure projects are effective and responsive
    - focus on enabling the coordination and integration of projects to leverage and demonstrate Program-level outcomes and impacts.

4. Deliver targeted communications and engagement activities to extend the reach and influence of the AdaptNSW Website and Forums.

    The evaluation found that the AdaptNSW Website and the Forums/Webinars were key mechanisms for disseminating climate adaptation information to stakeholders, and that there are opportunities to extend their reach and influence. For the Forums/Webinars, this is especially relevant to regional stakeholders. Strategic and targeted communications and engagement activities should be designed and delivered to respond to specific end-user needs (see Recommendation 1) to increase the reach, use and influence of the AdaptNSW Website and Forums/Webinars (these should also have corresponding MERI plans, as outlined in Recommendation 3). The evaluation surfaced a range of mechanisms that could be considered, including digital campaigns, partnership approaches and knowledge brokering arrangements (tailoring messaging to audience skill and knowledge).

5. Expand training and capability building initiatives to engage target end-users with different levels of skill and climate risk management maturity.

    The evaluation found the training and capability initiatives were integral to supporting the uptake of the tools and information generated through the Program. Expanding these initiatives to engage a range of end-users with different levels of skill and maturity in climate risk management (informed by active engagement of end-users as outlined in Recommendation 1) would enhance the impact of both these initiatives and the tools and information products they support.

6. Seek opportunities to further leverage the Enabling Regional Adaptation reports.

    The evaluation found the Enabling Regional Adaptation reports to be robust products for identifying priorities for climate risk adaption within target NSW regions, but there was limited

evidence that these had been implemented. Further work should be undertaken to understand how these products can be further leveraged to facilitate regional climate adaption activities and outcomes.

7. Deliver strategic funding programs for climate risk adaptation across NSW.

   The achievements of the IRCC grant program demonstrated a continued need for funding support for councils and communities to support climate risk adaption, and an opportunity for funding mechanisms to be more strategic and aligned to stakeholder needs. The design of the climate adaptation funding mechanisms should accommodate lower-capability councils and communities to respond to climate change risks, and be informed by the staff, resource and capability barriers of these councils and communities, as well as their climate adaption needs (informed by active engagement with end-users as outlined in Recommendation 1).

1   INTRODUCTION

1.1   About this report

This report presents the Outcome Evaluation for the Making Communities More Resilient to Climate Change (CRCC) Program (the Program), which ran from January 2018 to June 2022. The evaluation was commissioned by the NSW Department of Planning and Environment (DPE).

The evaluation aimed to assess the outcomes of the CRCC Program and the extent to which the Program principles were applied through the Program projects. It also aimed to surface recommendations to inform improvements to ongoing CRCC projects or similar future projects.

The evaluation was delivered in line with the CRCC Program Evaluation Plan – 'Project 3: Assess adaptation outcomes', the Helping Communities Become More Resilient to Climate Change Facilitated Review (CRCC Facilitated Review) (Clear Horizon 2022), the NSW Climate Change Fund Evaluation Framework (NSW Government 2022) and the Evaluation report writing – SES team guidelines for consultants (NSW Department of Planning and Environment 2022).

1.2   Background to the CRCC program

The CRCC Program (January 2018 – June 2022) aimed to improve the climate change resilience of communities, governments, and businesses by delivering climate information, adaptation support and financial support. The Program was delivered to contribute to the NSW Climate Change Framework Policy and the NSW Climate Change Fund (CCF) goals. It was funded through the CCF Package Action 12, totalling $31 million.

The findings of the Program's Mid-Term Evaluation (Clear Horizon 2020) that there was no 'formal' Program design for the CRCC Program led to the delivery of the CRCC Facilitated Review (Clear Horizon 2022). The output of the review was a collaboratively designed theory of change and narrative of the Program to be used to guide this end-of-program evaluation. The outputs of the review informed the following summary of the Program's design.

1.2.1 Program desired outcomes and principles

The Program's theory of change outlines the Program's intended outcomes and how these outcomes were expected to occur. It is accompanied by a series of principles outlining how the Program was and continues to be delivered. The theory of change and principles were collaboratively developed during the CRCC Facilitated Review, facilitated by Clear Horizon between April to June 2022 and involving the CRCC Program team. They were primarily developed to capture the work being done by CRCC and support this evaluation.

The desired broader goal of the Program was that **government, businesses, households, and the community manage risks posed by climate change and extreme weather events**. The Program aimed to contribute to this goal by:

- **embedding climate risk into decision-making** in a widespread and sustainable manner and establishing the necessary authorising environments and governance structures to support this. To achieve this, the Program would create and disseminate tools and information and provide adaption support to build the necessary knowledge and capability to contribute to this outcome.

- **facilitating the implementation of on-ground risk-informed climate adaptation initiatives** by local councils and communities. Through the provision of grant funding, the Program would remove a resource barrier to project delivery, contributing to this outcome.

Program delivery was underpinned by five principles:

- We do the right science
- We transform this into the right information
- We provide this to the right people
- We provide it at the right time
- We provide it in the right format

1.2.2 Program streams

The Program was delivered through a range of projects grouped under three streams - Tools and Information, Adaptation Support, and Funding, summarised in Table 3. A detailed summary of each of the projects is presented in Appendix 1.

Table 3 Projects delivered under the CRCC Program Streams

Project	Description
Tools and Information	
Climate data portal	The NSW Climate Data Portal provides data on projected and historical climate trends in NSW and south-eastern Australia. The portal hosts the NARCliM data.
NARCliM (NSW and Australian Regional Climate Modelling)	NARCliM provides access to fine-grained climate projections data. The data is more precise to Australia than any other climate model that is widely available. There are three versions of NARCliM: 1.0 released in 2014, 1.5 released in 2020, and 2.0 planned for 2023.
Natural hazard maps and reports	The project aims to provide natural hazard maps and reports to assist stakeholders to plan and respond to climate risks. While the project was funded by the CCF during the program period, it was not released during the period and therefore no outcomes could be evaluated.
Climate ready revegetation	The Climate Ready Revegetation Guide provides guidance on how to use climate projections in revegetation projects. Based on the Guide, the Climate Ready Revegetation Trial provided opportunities for Landcare groups to implement climate-ready revegetation projects.
XDI (Cross-Dependency Initiative)	XDI provides information on infrastructure risks and costs associated with climate change. The project was led by DPE, and the platform supplied by a private provider.
AdaptNSW website	The AdaptNSW website provides easy-to-understand climate adaptation information for a broad audience. The new website was launched on the 1st of February 2022, with the previous website refresh dating back to 2014.
Adaptation Support	
Enabling Regional Adaptation	Enabling Regional Adaptation aimed to guide the response to climate change in NSW regions. Workshops were delivered and reports produced for each region presenting a vision for a climate-resilient future and

Project	Description
	opportunities for action. The CRCC Program and this report cover the work for the North Coast and Hunter Central Coast regions only.
Climate Risk Ready	Climate Risk Ready aimed to facilitate a positive culture and skills for climate risk management across government. This included the delivery of the Climate Risk Ready NSW Framework, the delivery of a guide and training course to build government staff capacity to assess and integrate management of climate risks, and activities to build leadership and facilitate a positive climate risk management culture, embed climate change risk into policy, and create peer networks of climate risk practitioners.
Aboriginal Adaptation	Aboriginal Adaptation aims to increase the capacity of NSW Aboriginal communities to discuss and consider adaptation decision-making. Workshops are being delivered with Aboriginal communities to provide information on climate change and how it could impact cultural practice and values. This is helping the development of community-owned strategies for addressing climate change impacts.
AdaptNSW Forums and Webinars	The AdaptNSW Forums and Webinars highlighted climate adaptation activities, programs and achievements and helped build awareness of the practical actions being taken to make NSW more resilient to climate change with a broad audience.
Funding	
Increasing Resilience to Climate Change (IRCC) Grants	The IRCC grants were allocated to community groups and local councils to encourage the implementation of projects that address identified climate risks.

1.2.3 Program governance

The Program was overseen by The Action 12 Board (the Program Board), directly responsible for achieving planned Program objectives. The Board consisted of a partnership between two former DPE Directorates - Climate and Atmospheric Science (CAS) and the Climate Resilience and Net Zero Emissions (CRANZE). Program evaluations were overseen and coordinated by the Strategic Evaluation and Statistics Unit (SES) Unit within DPE.

1.3 Contextual considerations

The Program was delivered within a unique and evolving context. The following contextual factors are important to note for this evaluation:

- The Program Mid-Term Evaluation (Clear Horizon 2020) found funding delays led to the CRCC Program commencing 18 months later than anticipated. This delay was part of the reason an overarching CRCC Program Plan was not developed as the Program instead focused on delivering project outputs. The absence of a Program Plan was found to be limiting the overall effectiveness of the Program. In response to these findings, the CRCC Facilitated Review (Clear Horizon 2022) was undertaken and a revised theory of change, key evaluation questions, and performance rubrics were collaboratively developed.

- The Program Mid-Term Evaluation (Clear Horizon 2020) found the effectiveness of governance arrangements (The Action 12 Board) to be limited. While the Program Board was sufficiently overseeing project output delivery, it lacked a strategic, whole-of-program governance process, including for adaptive management, and an agreed and shared understanding of how project

outputs intended to influence shared higher-order outcomes. It also lacked a clear definition of roles and responsibilities and sufficient independence. In the absence of a strategic understanding of end-users, the Program Board had not been used to further leverage, engage and influence stakeholders.

- In 2021, the Managing Climate Risks to Assets and Services Audit (Audit Office of NSW 2021) was delivered. The Audit found that "DPIE and NSW Treasury's support to agencies to manage climate risks to their assets and services has been insufficient". The Audit reported that agencies with critical assets and services had not conducted climate risk assessments, and most lacked adaptation plans. No state-wide climate change adaptation action plan, adaptation strategy, or strategic plan for CCF had been developed. Agencies also lacked the knowledge and skills to assess climate risks.

- Significant natural disasters linked to climate change occurred during the Program period, including the 2019-20 Black Summer Bushfires, the February and March 2022 floods, and the COVID-19 pandemic.

- Since the Program ending in June 2022, the NSW Climate Change Adaptation Strategy (NSW Government 2022) was launched which was informed by the findings of the Program Mid-Term Evaluation (Clear Horizon 2020) and the Audit (Audit Office of NSW 2021) and provides the framework for the continuation of climate change adaptation projects beyond the CRCC Program period. This is not within scope of this evaluation.

1.4   About the evaluation

1.4.1 Purpose and design

The purpose of this CRCC Outcome Evaluation was to:

- test the effectiveness of the Program in achieving intended outcomes, including the extent to which the Program principles have been applied by the projects to successfully achieve outcomes

- inform improvements to ongoing CRCC projects and similar projects into the future

- meet the legislative requirements of the Energy and Utilities Administration Act 1987.

The scope of the evaluation included the delivery of the projects underpinning the CRCC Program during the program period (January 2018 – June 2022). It does not include the delivery or achievements of any listed projects beyond this period. It is worth noting that while the Natural Hazard Maps project was funded by the CCF, the project was not released during the Program timeframe and therefore no outcomes could be evaluated.

The evaluation design drew on the CRCC Evaluation Plan – Project 3 – Assess adaptation outcomes and used the Program's theory of change, principles, key evaluation questions (KEQs) and evaluation rubrics developed through the CRCC Facilitated Review (presented in Appendix 2 and 3). The Program's Key Evaluation Questions (KEQs) guided the design of the data collection tools and data analysis for this evaluation.

In line with the evaluation purpose and design, the report presents:

1. The overall performance of the Program assessed against the performance rubric.
2. The contribution of the Program to the intended outcomes of:

     a. government, businesses, households, and the community manage risks posed by climate change and extreme weather events

     b. embedding climate risk into decision making through the provision of knowledge and capability

     c. facilitating the implementation of on-ground risk-informed initiatives through removing resource barriers.

3. The unintended outcomes of the Program.

4. The extent to which the Program adhered to its principles.

1.4.2 Summary of the methodology

This evaluation took a mixed-methods approach using quantitative and qualitative data collection and analysis. The evaluation drew on the existing available Program data as well as additional data collection targeted at filling gaps. The evaluation approach was tailored to achieve the stated purpose of the evaluation, while also recognising the complex contextual considerations and known data limitations.

Data collection

The evaluation involved a detailed review of existing documentation and data and semi-structured interviews to add depth and context to the existing evidence. Where possible, quantitative data was incorporated including project reach and engagement data.

Existing data was collated through a review of 186 documents and datasets and Google Analytics data. New data was collected through semi-structured interviews with 34 project team members and end-users. Interviewees and documents provided coverage across projects. Data collected was used to surface Program outcomes, adherence to Program principles, unintended outcomes and lessons learned.

More information on data collected to inform the evaluation is included in Appendix 4.

Data analysis and synthesis

Qualitative data was analysed by drawing out themes that were most frequently raised. Individual contributions considered significant were also captured. Quantitative data from datasets were analysed using descriptive statistics and presented in graphs when useful.

Data was triangulated from different sources and synthesised against the KEQs and the three project streams in separate evidence tables. To provide a picture of outcomes and effectiveness of the Program as a whole, evidence was then re-grouped under three themes: Program Performance, Program Outcomes, and Adherence to Program Principles.

Findings and evidence were presented in participatory workshops with DPE staff including a Findings Workshop and a Recommendations Workshop, where the results were discussed, and relevant and practical recommendations identified and refined. This feedback was integrated into this report.

1.5 Limitations

While every effort was made to ensure a rigorous evaluation within the budget available, we note the following limitations in the methodology:

- Interviewees were purposefully sampled. While the interviews provided a good indication of a range of views within DPE and among end-users, they did not represent the views of all stakeholders.

- The availability of relevant project-level data and insights to inform the evaluation varied across projects, limiting the extent to which evaluative judgements could be made for both those individual projects and for the overall program. For some projects, there was limited existing available data and end-users had not been sufficiently defined, making it challenging to identify and access end-users to interview.

- While the Program's theory of change and key evaluation questions were revised (June 2022), at the time of the evaluation, this thinking had not been translated into the design of the Program or projects, nor the collection of associated monitoring data. This further limited the availability of relevant data, or ability for interviewees to provide insights into the Program's contribution to embedding climate risk into decision making or changes to the authorising environment and governance structures.

- The evaluation drew on the State Agency Preparedness Survey (NSW Government 2023) to understand the scale of impact of the CRCC projects included in the survey (Climate Data Portal, Climate Risk Ready, AdaptNSW website, XDI). This survey was conducted by the Office of Energy and Climate Change (OECC) and was not designed specifically for this evaluation. Therefore, the evaluation only used the survey results that could be directly correlated with the CRCC program.

2 EVALUATION FINDINGS

The findings of the evaluation are presented in the following sections:

2.1 Overall Program performance

2.2 Intended outcomes of the Program

    2.2.1 Government, businesses, households, and the community manage risks posed by climate change and extreme weather events

    2.2.2 Embed climate risk into decision making through the provision of knowledge and capability

    2.2.3 Facilitate the implementation of on-ground risk-informed initiatives through removing resource barriers

2.3 Unintended outcomes of the Program

2.4 Program adherence to principles

2.1 Overall Program performance

The overall performance of the evaluation's key findings is 'Fair'. These performance assessments used the rubrics developed through the CRCC Facilitated Review (Clear Horizon 2022) (Appendix 3).

Table 4 presents the summary of the judgements made against these rubrics drawing on the findings of the evaluation relating to the Program's outcomes and its adherence to principles, which are further detailed in the following sections of this report.

Table 4 Overall Program performance against evaluation performance rubrics (CRCC Facilitated Review, 2022). There are three performance levels – Good, Fair, and Area for Improvement.

Area	Performance	Assessment
Overarching Program		
Overall	**Fair**	• The Program design reflects a reasonable understanding of the needs of the end users it was targeting. • The quality and combination of fit for purpose information and tools, in combination with grants, and capacity building activities has been somewhat effective in supporting government, businesses and the community manage risks posed by climate change and extreme weather events.
Climate risk informed decision making	**Fair**	• There is some evidence that governance structures have been established that have helped adaptation or climate risk management being embedded in decision making. • There is some evidence that authorising environments have been influenced that can enable better climate risk management. • There are some instances of organisations that have developed policies and/or guidance that is supporting climate risk management.
Program Streams		
Tools and Information	**Fair**	• The design of the information and tools reflected that the end users and their needs were understood to some extent. • End users sometimes found the tools accessible, timely, and fit for purpose. • There is some evidence that the information and tools were used by government, businesses and the community manage risks posed by climate change and extreme weather events.
Adaptation Support	**Fair**	• The adaptation support was designed in a way that targeted the needs of the end users to some extent.

Area	Performance	Assessment
		• The support was somewhat effective in addressing the capability issues.
		• There is some evidence that participants have applied their learnings.
Funding	**Fair**	• The use of grants was somewhat effective in addressed the resource barriers.
		• The design of the grants criteria enabled some of the funding to be directed to where it was needed.
		• The value of the grants was somewhat effective in addressing the resource barrier meaningfully in the context of the relevant constraints.

2.2   Intended outcomes of the Program

2.2.1 Government, businesses, households, and the community manage risks posed by climate change and extreme weather events

Key finding

The CRCC Program contributed to government, businesses, households, and the community managing risks posed by climate change and extreme weather events through the establishment of important foundations for climate risk management through each of the Program streams. Through the Climate Risk Ready project and the development of the Climate Risk & Resilience Strategic Roadmap, the Program contributed to improving the high-level authorising environment and governance for climate risk management. There is however limited available evidence that the Program contributed to more widespread changes in climate risk management to date. This can be partly explained by the lack of a coordinated, strategic approach to Program design and delivery.

The Program contributed to the intended overarching outcome of **government, businesses, households, and the community manage risks posed by climate change and extreme weather events** by providing important foundations for climate risk management. These included the information products, capacity building, and grants that supported climate change risk management and adaptation delivered through the projects under the three Program streams. These foundations contributed to some stakeholders incorporating climate risk into their decision-making (detailed in section 2.2.2) and to the implementation of on-ground risk-informed initiatives (detailed in section 2.2.3).

However, the evaluation found limited evidence of a coordinated effort across the Program to ensure that the foundational work delivered through the projects informed decision-making in a strategic and widespread manner. This is consistent with the findings of the Program Mid-Term Evaluation (Clear Horizon 2020), which pointed to factors limiting the scale of outcomes for CRCC. This included the absence of a whole-of-Program design, describing how each of the projects would be delivered to achieve shared outcomes. There was also a lack of strategic cross-directorate collaboration and the Program Board lacked strategic oversight, a whole-of-program view, and an agreed and shared understanding of how project outputs intended to influence shared higher-order outcomes.

Through the Climate Risk Ready project, the evaluation found some evidence of the Program contributing to changes to the overarching authorising environment and associated governance structures through the development of the Climate Risk & Resilience Strategic Roadmap in 2022 (NSW Department of Planning and Environment, NSW Treasury 2022), of which the scope is outlined below:

> *"The Roadmap is an internal-facing action plan to enable improved decision making by Clusters and entities about how to respond to climate change. It is focused on developing the tools, inputs, processes, governance and practices to enable and support a more climate aware decision-making by government. Through this, it seeks to mainstream these considerations into government activities and increase the maturity of our climate risk management capability." (Climate Risk & Resilience Strategic Roadmap, 2022)*

This Roadmap may contribute to more widespread, strategic, and sustainable changes in climate risk management in the future. It was approved by the Secretaries Board, giving it legitimacy, and each recommended action was assigned a stakeholder group to oversee implementation.

This change to the authorising environment is consistent with Program staff and the State Government Climate Change Readiness 2023 Survey Report (2023)[1] reporting improvements to the authorising environment following the Managing Climate Risks to Assets and Services Audit (Audit Office of NSW 2021).

While gaps in strategic coordination at the time of Program delivery limited the impact of the Program on its overarching outcome of government, businesses, households, and the community manage risks posed by climate change and extreme weather events, the Program delivered important foundations for climate risk management and a change in the authorising environment, which is likely to help the delivery of this outcome in the future.

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[1] The State Government Climate Change Readiness 2023 Survey Report (NSW Department of Planning, Industry & Environment, Taverner Research Group 2023, n=75) provides insights on governance and authorising environments for climate change management as of June 2023 (one year after the CRCC Program concluded). Most government agencies surveyed had a governing body with oversight responsibility for climate-change risks. 93% reported that their senior executives had begun engaging with the issue. Around 30% reported having clearly outlined and documented roles and responsibilities to manage impacts of climate change. However, the survey concluded that while climate related risks and opportunities were on the agenda of most responding agencies, only a minority had acted to incorporate these risks and opportunities into management plans. There was no indication of the contribution of the CRCC program to these outcomes.

2.2.2 Embed climate risk into decision making through the provision of knowledge and capability

Key finding

The Tools and Information and Adaptation Support projects contributed to a range of instances of climate risk becoming better integrated into decision-making. However, the evaluation found that the influence of these projects on decision-making did not appear to be strategically coordinated. It is unclear whether the Program led to the integration of risks into decision-making to be widely institutionalised.

The **Tools and Information** projects together reached more than 366,460 users with several instances of changes in climate risk knowledge for end-users, and instances in this knowledge being used in decision making.

The **Adaptation Support** projects together reached more than 1,802 users again with several instances of changes in climate risk management capability and knowledge, and some instances of this being used in decision making.

Summary of the projects' contribution to decision-making

The Tools and Information and Adaptation Support projects contributed to a range of instances of climate risk becoming better integrated into decision-making, presented in Table 5.

Table 5 Summary of the instances of impact from Tools and Information & Adaptation Support projects on decision-making

Project	Instances of impact
Tools and Information	
XDI	• **9 government agencies** commonly used XDI to assess climate change risks (State Agency Preparedness Survey, NSW Government 2023, n=75).
	• The **NSW Asset and Liabilities Committee** (ALCO), **NSW Treasury Intergenerational Report**, and **Infrastructure NSW** and **Infrastructure Australia** incorporated climate risk metrics into their reporting based on information from the XDI tool.
	• Sydney Water, NBN Co, Department of Communities and Justice, and the NSW Government's housing portfolio used information from XDI for asset management and planning.
Climate Ready Revegetation	• All **3 Trial participant groups** started the Trial using the Climate Ready Revegetation Guide, which guided some of their decision-making during the Trial.
NARCliM and Climate Data Portal	• **15 government agencies** commonly used the Climate Data Portal to assess climate change risks (State Agency Preparedness Survey, NSW Government 2023, n=75).

Project	Instances of impact
	• Interviewees from **the water, transport, conservation, and bushfire risk sectors** reported using NARCliM data for climate risk decision-making.
AdaptNSW website	• **39 government agencies** regularly used the AdaptNSW website as guidance material to assist with climate change risk assessment, management, or adaptation work (State Agency Preparedness Survey, NSW Government 2023, n=75).
	• Two end-user interviewees spoke to how they had used the website for climate adaptation work.
Adaptation Support	
Aboriginal Adaptation	• **Three Aboriginal communities** already felt better equipped to manage and adapt to risks posed by climate change as a result of the Aboriginal Adaptation work currently in progress.
Climate Risk Ready	• **60 government agencies** accessed the Climate Risk Ready NSW Guide as guidance material to assist with climate change risk assessment, management, or adaptation. 41 of the 60 accessed it regularly (State Agency Preparedness Survey, NSW Government 2023, n=75).
	• **54 government agencies** accessed the Climate Risk Ready Training Course as guidance material to assist with climate change risk assessment, management, or adaptation. 39 of the 54 accessed it regularly (State Agency Preparedness Survey, NSW Government 2023, n=75).

Contribution of Tools and Information to decision-making

The **Tools and Information** projects delivered several instances of change in climate risk knowledge for end-users, which in some cases contributed to decision-making being informed by climate risk:

- Knowledge was disseminated on climate projections, asset risks, and climate-ready revegetation. This was sometimes used to assess climate risks and inform resilience work.

- The work contributed to the awareness of decision-makers of the need for a systematic and evidence-based way of identifying risks posed by climate change.

- The work contributed to the understanding that climate data and information have a vital role to play in adaptation planning and risk mitigation.

From December 2020 to December 2022, **NARCliM** data was downloaded by 50 unique users. As there is no information on who these users are, a conclusion cannot be drawn on how many of the 96 organisations originally targeted by the project (identified in the Helping communities to become more resilient to climate change – Climate Science Program Communications Plan Version 2.0 (NSW Government 2019)) were ultimately reached by NARCliM and the Climate Data Portal.

Nevertheless, the **Climate Data Portal** was commonly used by 21% (or 15) of government agencies surveyed to assess climate change risks (State Agency Preparedness Survey, NSW Government 2023, n=75). Interviewees reported that **NARCliM** had fed into documentation contributing to climate risk decision-making in the water, transport, conservation, and bushfire risk sectors:

> *"NARCliM feeds into our future planning around water security in a big way. Basically all our projections of future inflows are reliant on NARCliM, and as a result, we're using that to make decisions around the timing of infrastructure augmentation and what actions we should have in place if we get into that situation"* (NARCliM end-user)

> *"Transport for New South Wales are right now using NARCliM 1.5 data to look at how climate change is likely to impact their infrastructure."* (NARCliM project team member)

> *"Colleagues actually in the conservation sections of DPE have used NARCliM data to specifically look at conservation questions"* (NARCliM project team member)

> *"Those simulators are used operationally to plan on the go with live fires [and] in the risk planning stage."* (NARCliM end-user)

Interviewees also identified that the work done under NARCliM and the Climate Data Portal contributed to the understanding that climate data and information have a vital role to play in adaptation planning and risk mitigation.

> *"The work that we've done has built that up, understanding that climate data and information does have a vital role in adaptation planning and climate risk mitigation and impacts analysis."* (NARCliM project team member)

Four out of ten end-user interviewees said that NARCliM had improved stakeholder confidence in their decisions relating to climate risk. NARCliM, which provides the climate projections with the finest-grained resolution, was best placed to inform decision-making relating to climate change adaptation.

> *"By using the regional downscaled models, it gives greater confidence that the scenarios are realistic. Also, I guess, to us and to the audience, that the scenarios are realistic. I think with a lot of climate change work, part of the job is making sure the audience has confidence in what you're saying, not just that we have confidence."* (NARCliM end-user)

While there was no 'reach' dataset available for **XDI**, the State Agency Preparedness Survey (2023), identified that 54 out of 75 government agencies surveyed had accessed XDI. As there is no other information on users, no conclusion can be made on how many of the 164 target stakeholders identified in the Cross-Dependency Initiative (XDI) NSW Project Communications and engagement plan 2020-2022 (NSW Government) were ultimately reached.

XDI was commonly used by 12% (or 9) of government agencies surveyed to assess climate change risks (State Agency Preparedness Survey, NSW Government 2023, n=75). XDI informed asset management and planning decisions for stakeholders including Sydney Water, NBN Co, Department of Communities and Justice, and the NSW Government's housing portfolio. XDI was also part of the evidence mix informing the upcoming NSW State Disaster Mitigation Plan (not yet published).

One out of four interviewees identified that XDI had also helped build the awareness of decision-makers of the need for a systematic and evidence-based way of identifying risks posed by climate change:

> *"I think it has brought to the attention of decision makers about the need to have a systematic, evidence-based way of identifying the risks imposed by climate changed induced hazards on infrastructure, in particular the interdependencies between infrastructure failure, that when one*

infrastructure fails and the cascading effect on other infrastructure. I think that's been valuable having a project that helps to elicit that sort of thinking and collaboration across government because that really helps with building the capability and developing the awareness across officials by the need to collaborate along these lines." (XDI end-user)

Three Landcare groups participated in the **Climate Ready Revegetation** Trials. This met the Trial's target of engaging three to four groups.

All participant groups interviewed for the Trials had started the Trial using the Climate Ready Revegetation Guide, which guided some of their decision-making during the Trial. However, there was no evidence of the Guide influencing decision-making beyond the Trial, except for one nursery deciding to focus on producing and stocking climate ready species.

The **AdaptNSW website** was accessed by 366,407 unique users during the Program period. This included 35,434 unique users since the launch of the new website on 1 February 2022 until 30 June 2022. The website exceeded its reach targets every year during the CRCC program (2018 to 2022) except for financial year 2017-18, which started before the program began.

Website user numbers from 2018-2022 were higher than pre-2018. The new AdaptNSW website has so far showed promising results for attracting and retaining website users. Since the launch of the new website, user numbers have increased slightly compared to the same period in 2021 (Figure 1).
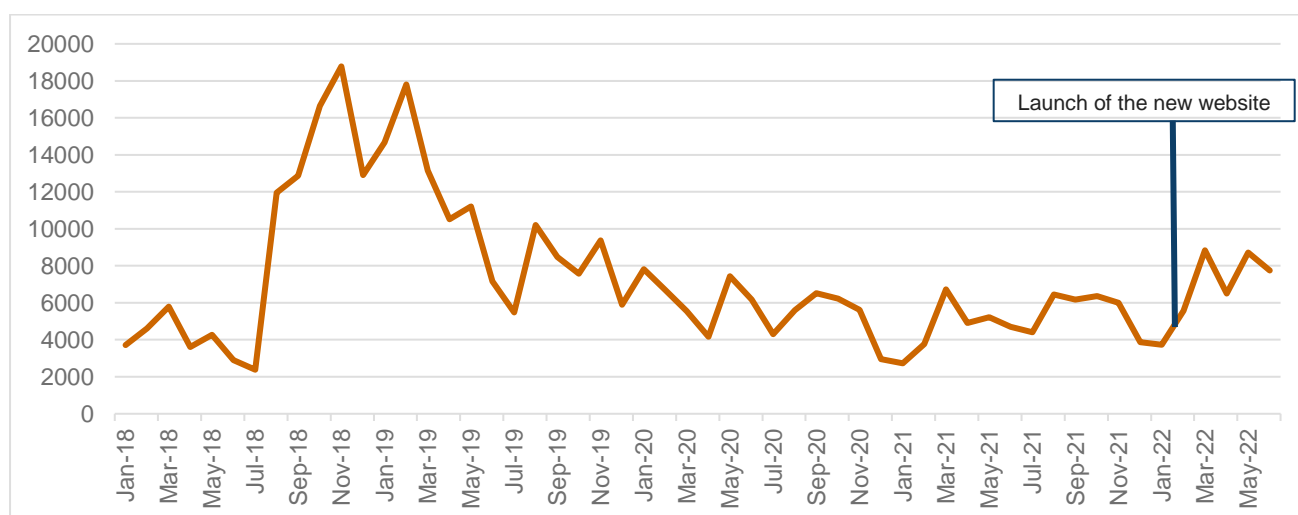
Figure 1 Number of AdaptNSW website users from 1 January 2018 - 30 June 2022 (Google Analytics)

Other supporting data demonstrating the use of the website includes:

- 13% of the 366,407 website users from 1 January 2018 to 31 January 2022 were return users.
- 18% of the 35,434 website users since the launch of the new website in February 2022 until June 2022 were return users.

Of government agencies surveyed 53% reported regularly accessing the **AdaptNSW website** as guidance material to assist with climate change risk assessment, management, or adaptation work (State Agency Preparedness Survey, NSW Government 2023, n=75). Two interviewees said that the website could be used to undertake "broad" climate change risk assessments or to get an overall picture of climate risk.

> *"We undertake more broad climate change risk assessments, and we obviously need climate change projections to do that at a less granular scale than this specific point, kind of thing, and so the Adapt New South Wales website has that kind of broad information about change in temperature and rainfall and humidity and stuff like that on it."* (AdaptNSW website user)

Project team members spoke to how they could incorporate decision-making tools into the website to assist decision-making in the future:

> *"Decision making, that's harder to understand and I feel like we do need more specific tools and resources on the website to assist with decision making. […] So I think definitely providing some more of those decision-making resources, that's where I feel that there's a big need."* (AdaptNSW website project team member)

Contribution of Adaptation Support to decision-making

The **Adaption Support** projects delivered some important changes in capability:

- Climate Risk Ready participants increased their knowledge on how to apply climate risk mitigation and adaptation work into their work and skills to deliver Climate Change Risk Assessments

- three Aboriginal communities became better able to continue traditional cultural practices and manage Country and culture in the context of a changing climate

- Enabling Regional Adaptation participants increased their knowledge of climate risk related actions and activities that required support within NSW communities.

The Adaption Support work had some degree of influence on climate risk being integrated into decisions through the Climate Risk Ready project, but the influence of other projects was of a small scale or uncertain.

End-users of the **Climate Risk Ready** training were able to demonstrate an increase in knowledge on how to apply climate risk mitigation and adaptation work into their work. One noted that it brought an understanding of climate change vulnerability, what adaptative capacity is, and how to build on that to assist with transformation. Another end-user said that it gave them 'somewhere to start…it's helped us ask the right questions and given us a direction to work in…' but it was difficult to determine the outcomes just yet. 80% of government agencies surveyed had accessed the Climate Risk Ready NSW Guide and 73% had accessed the Climate Risk Ready Training Course as guidance material to assist with climate change risk assessment, management, or adaptation (State Agency Preparedness Survey, NSW Government 2023, n=75).

One out of six interviewees highlighted how Climate Risk Ready had led to the creation of documentation which may inform decision-making in the future. This included the Climate Risk & Resilience Strategic Roadmap (NSW Department of Planning and Environment, NSW Treasury 2022) and the Maturity Health Check Tool (designed to help organisations in the NSW Government sector to assess their existing climate risk management capacity), which led to the Adaptation Strategy and funding for a network of Climate Change Risk Officers.

Project team members for **Aboriginal Adaptation** noted that the work had so far contributed to Aboriginal communities changing their ways of thinking about the problems they are facing from climate change and extreme weather events. As a result of the work, the three Aboriginal communities who are participating in the project have been better able to continue traditional cultural practices by reframing

how to protect lands of cultural significance in the context of climate change. The impact has however been limited to the three communities, representing about 2.5% of the NSW LALCs.

The **AdaptNSW Forums and Webinars** had 1,483 participants from 2018 to 2022. Interviewees highlighted that the Forum/Webinar participants and presenters provided a wealth of knowledge, enabling knowledge transfer for all who attended. This was also demonstrated in the AdaptNSW Forum/Webinar surveys (NSW Government 2019-2022) with a range of 95-100% of respondents noting they learnt something at the workshops that they would use in their jobs in the future. However, other evidence of change in capability and influence on decision-making was not available.

Enabling Regional Adaptation workshops for the Hunter Central Coast had 150 participants and the North Coast workshops had 166 participants. Interviewees noted how the work increased the knowledge of actions and activities that required support within the community. Enabling Regional Adaptation also helped the capability of councils and communities to identify opportunities for their grant projects.

Apart from this, it was noted by interview participants that the Enabling Regional Adaptation work mostly did not proceed beyond the planning stage. Some regions with regional staff including North Coast and Hunter Central Coast drove implementation plans but did not proceed with implementation and the work was mostly discontinued. This was due to the final output of the Enabling Regional Adaptation work being a report, and without someone from a state agency driving this work, it was difficult to implement. While it is rarely the role of government to help with implementation, practical assistance was needed in this case to enable this work to inform decision-making.

> *"It just provided a report and a sort of planning document for people to pick up and navigate but to actually deliver change and all that and capacity, it probably didn't. Basically, the capacity fell on the staff member that was in the adaptation team in the region. You take that staff member out and the capacity was gone." (Enabling Regional Adaptation participant)*

While both the Tools and Information and the Adaptation Support projects recorded instances of climate risk being imbedded in decision-making, it is unclear whether the Program contributed to the integration of risks into decision-making to be widely institutionalised.

2.2.3 Facilitate the implementation of on-ground risk-informed initiatives through removing resource barriers

Key finding

The IRCC grants contributed to the completion of 53 council and community climate risk adaptation and mitigation projects. The grants helped remove a funding barrier to implementing these projects. Some resourcing constraints were not however addressed by the grants and posed limits to the impact of these projects. They included councils or community groups not having the necessary staff resources to deliver the projects and manage the grants' administrative requirements (application, midterm evaluation, final report), and for some councils, funds needed to be stretched to ensure grant outcomes were met. Grantees raised that resourcing was an ongoing barrier to making change for climate adaptation.

The funding provided by the IRCC grants provided an incentive for projects addressing climate risk to begin. A total of $600,000 worth of community grants were delivered (average of $10,000 to $30,000) to 23 successful community grantees. The council grants were awarded to 32 individual councils and regional groups of councils over three funding rounds with a total of $2.8 million delivered.

Community grant interviewees spoke to the grants providing the 'spark' for volunteer groups to take action on climate adaptation and a means to begin. Similarly, one project team member interviewed noted that the council grants provided a 'kick off' for the project which wouldn't have happened without the CRCC support.

> *"A lot of the projects wouldn't have been able to deliver outcomes without the funding. And in a lot of cases, it's because community groups are volunteer driven, and they can identify plenty of needs in the community for various reasons. And in terms of climate adaptation, I don't know how high up the priority list that would have been for a lot of these groups. I think there is a strong need for funding in order to deliver." (IRCC project team member)*

The grant value was appropriate for the projects, however community groups reported needing to use already established connections along with in-kind and pro bono support from volunteers and partners to ensure the projects were a success. Concerns were raised by one interviewee about having to fund the final stages of projects prior to acquittal, noting that it could be difficult for some communities to have that funding on hand to complete projects.

> *"I think the only thing we had difficulties with at the end with the acquittal was, I think we had to carry the last 10%, which 10% of 30,000, … you've got to be really careful in that space. For some small community organisations, that wouldn't be fine." (Community grant recipient)*

Both councils and communities noted that while a grant is a great first step, they did not address resourcing barriers including staffing, council and community capacity and time. Even the ability to successfully write an application for a grant can be a barrier. The administration cost ceiling within guidelines of the grants meant that neither council or community could employ someone to deliver the grant, and many councils and communities didn't have the administrative resources to deliver the program internally.

> *"Some councils have grant managers within their council but there are many councils that just don't have that. I'm not sure how we fix that because they are some of the most vulnerable communities that have/will be impacted by climate change." (IRCC project team member)*

At least one council mentioned that they would not be able to apply for another grant at this time and noted that there is an assumption that councils have the resources to be able to make significant changes in this area.

> *"If there was another round coming up I don't think we could apply because we don't have the people to deliver. For us to take on this work, I mean we definitely want to do that, but the grant didn't allow us to engage staff or to assist us with delivering some of these. And I think we've heard similar from some of our councils who might be a little bit smaller. The resources to implement this stuff, being able to access that, would be really, really helpful." (Council grant recipient)*

Despite resourcing challenges of the 23 community grants delivered, the acquittal of community grants evaluation showed that the majority of the grants were rated as either being exceptional or superior in meeting community benefit rating with three being rated as adequate, and no grants receiving a rating of poor. Grantees were able to complete meaningful projects that have continued impact, including food security for Indigenous and elderly people in community, access to water, as well as translating emergency directions into multiple languages for new arrivals. Grantees also used education and capacity building in their projects to support the sustainability of the projects.

The IRCC Project Final Report (NSW Government 2022) noted that the measures from across all council grant projects show that funded projects contributed to the objectives of the IRCC program. The projects contributed to the knowledge base to inform decision making through new research, applications, and transferrable products. Projects have mitigated 69 climate risks to both council operations and the community. Adaptive capacity has been increased by collaborations within and between councils, stakeholders and the community as well as sharing the learnings from these projects.

While community and councils noted that receiving funding from this initiative was a good start the work is only just beginning, as the need for resources increases.

> *"I think moving forward this is definitely a growing area where there will be increasing need for support, whether it's through government grants or similar. Just looking forward, and I don't know whether the Government is looking at another round of this type of grant funding but definitely think this was the tip of the iceberg and we just see the need for research and programs in this place increasing moving forward." (Council grant recipient)*

Vignette: The ripple effect of council grant projects

"There are a number of projects under the council grants work that were able to be replicated in other areas. The Karangi project was about using a tool to engage with community around different hazards and sort of take them through scenario planning. You know, 'here's a particular scenario of fire, what actions would you take now?' Update the map, which is a 3D map, and continue to test people and get them to understand the actual decision making in an actual fire. That type of tool has now been replicated for communities on the south coast and on the north coast.

We also funded WSROC around developing an urban heat management toolkit. That's not only benefitting their councils but there are councils all over the place, looking to leverage that and apply it in their own contexts. So, I think looking at the grants, there's really been these wider benefits." (IRCC project team member)

2.3 Unintended outcomes

> ### Key finding
>
> The Program contributed to the following unintended outcomes:
>
> - fostering better collaboration in climate adaptation planning, which may support the establishment of a more coordinated approach to climate risk management in the future
> - culturally safe work practices leading to increased practice of culture on Country
> - support for the development of Taskforce for Climate-related Financial Disclosure Statements.

The Program contributed to a number of positive unintended outcomes.

Several CRCC projects including Enabling Regional Adaptation, XDI, Climate Risk Ready, the AdaptNSW Forums, and Aboriginal Adaptation contributed to more instances of collaboration in climate adaptation planning.

The **Enabling Regional Adaptation** work ensured engagement across multiple stakeholders in a region, including state agencies, local councils, regional asset holders and managers, and Aboriginal communities. This allowed for those agencies to be 'in a room' together to discuss issues in relation to climate change and extreme weather events. Interview participants highlighted the benefit of collaboration in climate adaptation planning:

> *"I know that lots of people have commented over the years on nothing came of [the Enabling Regional Adaptation work] because there was a whole lot of workshops […] there obviously was value in having those discussions, even if it hadn't got to the point where people had been able to resolve those problems." (Enabling Regional Adaptation project team member)*

Interviewees also spoke to **XDI**, the **Climate Risk Ready** training, and the **AdaptNSW Forums** creating opportunities for collaboration and relationship building including across government, which are essential to the work in climate resilience:

> *"The thinking that's gone into the XDI tool, the relationships that have been built around these issues, and also the evidence and the datasets and that sort of thing, I think it is important developing that awareness and capability in government around these issues. […] I think the sort of thinking, that sort of collaboration that it helped instigate will be of enduring importance given the relevance of climate resilience to our community." (XDI end-user)*

> *"[After the Climate Risk Ready training], we now know how to better interact with our risk team in order to incorporate it into business as usual." (Climate Risk Ready training participant)*

> *"I guess one of the big outcomes out of the Forum is just getting people together. […] You hear just that networking opportunities and people talking to each other. In the feedback, that's always one of the big positives." (AdaptNSW Forum/Webinars project team member)*

The **Aboriginal Adaptation** work also demonstrated cross-agency collaboration, working with cultural scientists, climate change scientists across departments and Aboriginal communities on Country for climate adaptation planning.

The CRCC Program also contributed to culturally safe work practices, leading to increased practicing of culture on Country. The **Aboriginal Adaptation** work has been conducted in such a way that the work is Aboriginal driven, led and owned. As a result, there has been an increased practicing of culture on the Traditional Owner group lands. In addition, an internal Engagement Strategy is currently being developed for NSW Agencies to use as a 'demonstration project' for how to engage in a culturally safe way with Aboriginal communities across the state, ensuring to protect the intellectual property of Traditional Owner groups and work with them in a way that is culturally respectful and safe.

Finally, the CRCC Program provided support for the development of Taskforce for Climate-related Financial Disclosure Statements (TCFDS). The Taskforce's Framework is an internationally accepted standard for reporting on climate risks and opportunities. Although not a direct result of the Program's activities, the TCFDS are currently being developed for every state agency. It was highlighted by two interviewees out of six that the **Climate Risk Ready** training and guide has put agencies in a great position to be able to create these statements in a systematic and rigorous way.

2.4 Program Adherence to Principles

Overarching finding

The CRCC Program was informed by five principles that suggested how to 'deliver the Program right' to achieve outcomes. The projects were generally successful in adhering to the principles:

- The Program adhered to the '**we do the right science**' principle. Projects were based on the most up-to-date science at the time of development, and a mindset of continuous improvement helped ensure that scientific foundations stay robust.

- The extent to which the principle of '**we transform this into the right information**' was adhered to varied depending on the projects. The information provided met the needs of some users but not all user groups essential to climate risk management. Information also did not necessarily encourage implementation. The absence of an overarching Program plan outlining a coordinated approach to meeting information needs made it challenging for CRCC projects to complement each other in meeting information needs.

- The extent to which the principle of '**we provide this to the right people**' was adhered to varied across projects. The 'right users' were not always defined with sufficient detail, and the definition of the 'right users' was evolving. While there were examples of relevant end-users accessing the projects, there was no substantive evidence of projects reaching 'decision-makers' with the power to embed climate risk into decision-making in a sustainable manner. The grant process could also have been set up to reach users with more acute needs and who will have a more substantive impact.

- The Program adhered to the '**we provide it at the right time**' principle. End-users needed most projects at the time of delivery so they could progress their climate adaptation work.

- The extent to which the principle of '**we provide it in the right format**' was adhered to varied across projects. End-users were generally satisfied with the format but suggested several improvements, so the projects could better meet their needs.

This section outlines the extent to which the CRCC Program adhered to the Program principles in the delivery of the different projects, impacting the achievement of the outcomes explored in sections 2.2 and 2.3.

Throughout this section, findings are presented under each principle. The projects relevant to each principle and where evidence was available to speak to the principle are outlined in Appendix 5.

2.4.1 Principle 1: We do the right science

> ### Key finding
>
> The CRCC Program adhered to the principle of 'doing the right science'. The projects were based on the most informed and up-to-date science at the time of development. Importantly, a mindset of continuous improvement underpins CRCC science and helps ensure that the scientific foundation of projects across the CRCC Program and beyond stays robust.

The following section presents the extent to which the Program adhered to the principle of 'we do the right science', and draws on assessments of the NARCliM, XDI, Climate Ready Revegetation and Enabling Regional Adaptation projects.

Most evaluation participants were satisfied with the quality and robustness of the science informing **NARCliM**. Four interviewees out of twelve pointed to each of the three NARCliM iterations (1.0, 1.5 and 2.0) evolving to use the latest models and modelling enhancements at the time. The Managing Climate Risks to Assets and Services Audit (Audit Office of NSW 2021) also assessed NARCliM as a robust approach to climate projections. This is particularly important as NARCliM provides foundational data for several other CRCC projects, including XDI, the AdaptNSW website, Climate Risk Ready and Enabling Regional Adaptation.

> *"NARCliM 1.0 was one of the first projects of its type in this country. When NARCliM 1.5 came along, one of the improvements was to have 150 years of continuous simulation. […] That is an improvement in the product offering to the end user, because they've got a continuous time series, very, very important. The other thing that NARCliM did different, was to use the latest global climate models at the time." (NARCliM project team member)*

Several interviewees acknowledged that that technical trade-offs need to be made with regards to the science underpinning projects and acknowledged that some limitations cannot be resolved. Still, important technical gaps were identified in the ability of NARCliM data to support climate risk assessments into the future:

- Two out of ten end-user interviewees suggested that NARCliM didn't cover climate variability, an important factor in planning for resilience to extreme weather events.

> *"What NARCliM gives you is a snapshot of what the next 80 years might look like. It doesn't really cover off on variability, and climate variability is a massive issue for a lot of people and particularly in water supply because most of the time everything's fine, but it's the droughts that really test out whether your system is okay or not." (NARCliM end-user)*

- One out of ten end-user interviewees believed the historical picture of NARCliM could be improved.

> *"…leaves open the question of how does the 'model present' compare to the 'actual present' […] having that picture of historical conditions to help you interpret the future changes is quite important, […] that's just more of a comment than a kind of a criticism is how they're dealing with that historical picture." (NARCliM end-user)*

Even with gaps identified in the science of NARCliM, most end-user interviewees believed it was 'doing the right science'.

One interviewee out of five pointed to the science underpinning **XDI** being robust. XDI is generally informed by NARCliM's high emissions scenario, which helps users plan for the worst possible climate scenario, but capability was also developed for XDI to use other emissions scenarios if needs arise.

> *"It does use the high emissions scenario. I think it's fine for the purpose. Essentially, from the asset we're trying to understand the extremes, so trying to understand the worst-case scenario, so if we do have this thing that we cannot live without, we want to make sure that it's resilient no matter what the future looks like" (XDI project team member)*

Over the course of the project, several adjustments were made to XDI to improve the science. While the NARCliM data underpinning XDI was not able to accurately predict changes in flooding due to climate change, later updates to the platform helped improve these predictions.

> *"One of the challenges […] is the interpretation of how flooding will change due to climate change. What was previously in the system was an approach using NARCliM data around changes in rainfall. That approach did not align with the government guidance on how to understand changes from flood due to climate change, so quite a bit of work was undertaken recently to update the methodology, which has since been updated and it does comply with that new methodology now." (XDI project team member)*

Another limitation was the lack of availability of infrastructure data, which limited the quality of XDI outputs. While at the start of the project, there was limited asset data present in the system, government asset data was added since then, improving the platform's utility.

> *"One of the issues we found was that there was just limited asset data that was in the system in the first contract, there was just random asset information they found from places, so they hadn't identified a government asset data source, so we did that and we've since included that in this latest version which has a lot more utility for users." (XDI project team member)*

The science underpinning the **Climate Ready Revegetation Guide** was also identified as robust science at the time of its publication by interviewees. The Guide informed the Climate Ready Revegetation Trials and assisted three out of three Trial groups to implement their revegetation projects. While one participant identified that the science had evolved since the Guide had been published, the project team indicated they planned to update the guide to ensure it reflected the latest science.

> *"At the time I guess you're basing information on what you know is good science at the time. So there's subsequent work now which has been done around genetics which allows us to incorporate genetics and that's what we will be doing this next time around. So it was made on the best available, but was it ideal no. It's that continuous improvement so I think you just need to recognise particularly in the adaptation space, climate change risk space, it's not a set and forget. You have to continually update and review as better information comes to light." (Climate Ready Revegetation project team member)*

Although, interviewees could not comment on the robustness of the science behind the **Enabling Regional Adaptation** work, the Pathways to Transformation: Implementing Enabling Regional

Adaptation (ERA) report (Institute for Sustainable Futures 2020) referred to the process and reports generated as *"unique and at the cutting edge of adaptation research in Australia in terms of their focus on whole-of-government (state and local) and on the scale of the assessment (NSW planning regions)".*

2.4.2 Principle 2: We transform this into the right information

> ### Key finding
>
> The extent to which the principle of 'we transform this [science] into the right information' was adhered to varied across projects.
>
> - **Tools and Information** projects met the information needs of key user groups, but the needs of some additional user groups important to climate adaptation management were not always met. While some end-users with 'more advanced' knowledge and skills of climate data and risks wanted further tailoring of the data, others needed simpler and more accessible information or more training to be able to use the information.
> - **Adaptation Support** projects also generally met user information needs but the information provided could have further encouraged the implementation of climate adaptation actions instead of its primary focus on planning for climate adaptation.
> - CRCC science was successful in helping grant applicants to identify areas of focus for their **IRCC grant projects**.
>
> Importantly, the absence of an overarching Program plan outlining a coordinated approach to meeting user information needs made it challenging for CRCC projects to complement each other in meeting the range of user information needs.

The following section presents the extent to which the Program adhered to the principle of 'we transform this into the right information', and draws on assessments of Climate Ready Revegetation, NARCliM, XDI, AdaptNSW website, forums and webinars, Enabling Regional Adaptation, Climate Risk Ready, Aboriginal Adaptation and the IRCC grants.

The **Tools and Information** projects met the information needs of some key user groups. However, there is room for improvement to meet the needs of additional user groups important to climate adaptation management, and additional needs identified by existing user groups.

NARCliM generally met the information needs of those with advanced climate modelling skills, a key user group. Seven out of ten interviewees with those skills or who supervised people who had those skills were satisfied with NARCliM outputs. The scale at which the data was presented was particularly helpful.

> *"The fact that it was fine scaled was good. It gives us some sense of the variation. We're actually quite small geographically, and of course, at the global and national scale, we're lucky to get one grid point." (NARCliM end-user)*

However, four out of twelve interviewees believed NARCliM outputs required a high level of modelling skill to be used appropriately. Five thought NARCliM did not serve the information needs of stakeholders in the engineering sector and those of decision-makers, who also drive important climate adaptation work.

"I've got an engineering degree, my boss has got an engineering degree, his boss has got an engineering degree, so we want to take a data, at least informed approach, to the climate risk assessment, and, we need a postdoc, an internal PhD and a couple of Profs to advise us, to make sure that we're calculating meaningful climate metrics from the NARCliM data, not misapplying them and drawing incorrect conclusions that could lead to, in transport context, hundreds of millions of dollars of mis-investment." (NARCliM end-user)

"I think the information that's on the Climate Data Portal or the NARCliM data that's available is really great if you're doing risk assessments or some science for it, but when you come to the practical engineering, it's really important to understand how calculations are normally done and to provide data which enables you to replicate those normal calculations, and that, in the instance of temperature, is hourly data." (NARCliM end-user)

Interviewees were generally satisfied with the **AdaptNSW website** content. Two of out six said it provided a good introduction to climate adaptation. Providing digestible content to a wide range of audiences was one of the main objectives of the project team when designing the new website, as told by one interviewee:

"We had personas about the kind of information, the tasks they were doing, and then the content was written framed in a particular way for those pages. The landing pages are designed to give you high-level information, then you dig down deeper if you're looking for more." (AdaptNSW website project team member)

Time spent on the most popular pages of the new AdaptNSW website was almost 7 minutes. Users appeared most interested in introductory information on climate change and extreme weather events as well as the Projections' Map page. These were consulted by thousands of users between the launch of the new website on the 1st of February 2022 and the 30th of June 2022, as demonstrated on Figure 2.
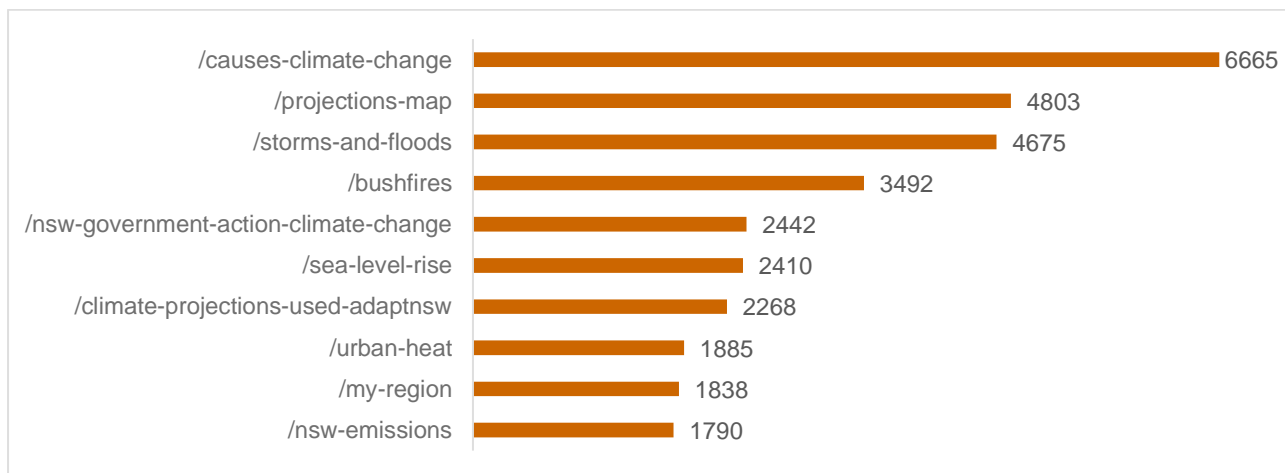
Figure 2 AdaptNSW website unique pageviews for the top 10 pages (01/02/22 – 30/06/22)

One website limitation identified was that it did not provide access to some of the climate adaptation information that professionals may need, with two interviewees wanting access to more detailed data reports on the website.

"The Adapt New South Wales website, it's got good summary information, but as soon as you want more specifics, it doesn't really have that info. I would say that Climate Change in Australia

has more of that more specific info, and it would be good to have a New South Wales source of that and they're probably working towards that." (AdaptNSW website user)

XDI interviewees were generally satisfied with information provided by XDI on climate risks to infrastructure assets, sharing that XDI information was easy to understand without having to be an expert.

"XDI, from a direct infrastructure perspective is a good tool to be understanding, a good tool that allows agencies to pick up and go essentially without having to necessarily be an expert on all the various components that sit underneath that solution set." (XDI end-user)

However, one out of four interviewees criticised XDI's ability to showcase risks to a network of assets. They wanted to understand the vulnerability of networks of assets.

"I'm not seeing readily in XDI, how I can look at connectivity and the network. […] I don't really want to sum up here's the risk to our bridges, this is the risk to our culverts, this is the risk to our roundabouts, that's eight categories of dates in there. What I care about, particularly on a first pass is, what's the risk, what's the vulnerability of the network and the connectivity that provides. I only really care about the assets at this stage, in the context of the network." (XDI end-user)

Participants in the **Climate Ready Revegetation** Trial found it challenging to use the Climate Ready Revegetation Guide. Most participants did not have the skills to implement the advice of the guide and required expert support. All groups interviewed relied on external stakeholders to deliver climate projections at local scales, as they needed the projections in a format they could work with.

Interviewees often identified that the skill-level needed to use tools such as NARCliM, XDI, and the Climate Ready Revegetation Guide limited their accessibility:

"You need to have quite a lot of expertise to be able to access the [NARCliM] data and I do think that is a bit of a limitation." (NARCliM end-user)

Three interviewees identified a broad capability issue impacting the use of the Information and Tools at a broader scale:

"It's just been a challenge in getting the capability of others up to a level such that these are used regularly and effectively. […] Now the question is, who's fault? […] Is it the agencies delivering these tools, then going out and making it more user friendly and trying to encourage use of their tools? Or is it, on the other hand, the agencies need to actually have some sort of carrot or stick that says you need to do more on adaptation and resilience in your thinking? And then they will just go to these tools. And obviously it's a mixture of both, right. I think there needs to be more push for people to need to access those things, and there needs to be more push on the agencies who own these tools to make sure that that fits with those needs so that it's a more seamless interaction." (Tools and Information projects end-user)

Adaptation Support projects generally met end-user information needs. Suggestions were provided to go beyond providing information for 'planning' and to facilitate the implementation of actions for climate adaptation management.

Feedback from end users noted how the **Climate Risk Ready** work was able to meet their needs, noting the usefulness of the training and guidance document. Three out of five end-user interviewees who spoke to the Climate Risk Ready work felt that the work was designed to address the needs of end users. These respondents noted that the tools that were developed, the training pack and the training itself was extremely useful specifically to assist in Climate Change Risk Assessment development.

AdaptNSW Forum/Webinars participants spoke highly about the fit-for-purpose nature of the Forums/Webinars they attended, finding the information useful and that they learnt something they could use in their work. Documents relating to the AdaptNSW Forum/Webinars spoke to how users found the information provided at the Forum/Webinars useful. From the 2021 event, 97.6% of survey respondents (42 out of 43 respondents) said that they learnt something in the webinar that they will utilise in their work.

Four out of six interviewees who spoke to the **Enabling Regional Adaptation** work felt that the work addressed the needs of end users (agencies, regional bodies and LGAs working in the region). However, two interviewees noted that perhaps the Enabling Regional Adaptation work did not meet end-user needs. One interviewee said that although the information that was provided and shared in the report was interesting, some organisations were more ahead than others and wanted to know what to do next beyond what was required in the report. This respondent said:

> *"It's all very interesting, but for us it's a bit 'last year', it's a bit 'basic'. But, for other councils, it would have been extremely useful and informative I'm sure." (Enabling Regional Adaptation participant)*

That same participant noted that different types of information outputs, such as implementation-focused case studies and discussions, would be helpful to drive the implementation of the Enabling Regional Adaptation report.

> *"You get the about information and interesting data and it's interactive, but then it gets hard when you go, okay, so what do I do in my role in my region...I think it is getting better over time, as more case studies come online and they put them up. For me, that's probably the most valuable thing out of everything is the case studies, you're seeing the practical implementation." (Enabling Regional Adaptation participant)*

Another Enabling Regional Adaptation end-user noted that although the Enabling Regional Adaptation work was engaging, the fact that there was no implementation strategy to act on what came out of the work in regions made it difficult for end-users to implement themselves. This respondent said:

> *"[The rating] could have been higher if it had been able to be carried forward into an implementation planning phase…I think…the next step would have been to connect this adaptation strategy to the broader community and find a way to communicate all of the things that the government agencies are doing to support community, improve community outcomes." (Enabling Regional Adaptation participant)*

Aboriginal Adaptation interviewees were not able to comment specifically on if support was designed to meet end user needs, not wanting to speak for the communities involved. However, they were able to provide information which suggests that how the work was conducted was an appropriate way to work with community.

Anecdotally they spoke of how one of the representatives from one of the communities noted *"how much she appreciated and how much we had done for them, and I think she meant that in the context of we haven't technically done anything other than asked them questions, but they're the questions that they needed to be asked from their perspective to enable these kinds of conversations"*. One project team member said that the agencies involved in this project worked hard to make it community-led and driven. This participant said that they *"were constantly checking in with what communities wanted and what was important to them."*

Documentation on the **IRCC grants** highlighted how science was transformed into the right information that the community and councils could use to identify areas of focus for their grant projects.

To be eligible for **community grants**, applicants needed to demonstrate that their proposal responded to an identified climate change impact and reference either the relevant NSW Climate Change Snapshot from the Adapt NSW website, or Local councils Floodplain Risk Management Plans, Coastal Management Plans or Programs, Bushfire or Ecological Climate Change reports, Climate Change adaptation plans.

To be eligible for **council grants**, applicants needed to cite climate change risk assessments meeting Australian standards or vulnerability assessments including participation in Integrated Regional Vulnerability Assessments (IRVA) or ERA projects led by DPE that were no more than five years old, or to provide alternative documentation showing 'how a climate change risk has been previously identified, that it is still current, and what work has been done to determine the suitability of the proposal as an adaptation project' (Guideline for Applicants to the Increasing Resilience to Climate Change Grants Program (Round 3), Local Government NSW 2020).

While CRCC projects met user information needs relating to the particular projects to some extent, there is not enough evidence to assess whether the CRCC Program as a whole is meeting the climate adaptation needs of its key end-users. While most CRCC projects identified end-users and their needs, there was no overarching nor consistent approach to identifying user information needs across the Program, as identified in the CRCC Mid-Term Evaluation:

> *"The absence of a formal CRCC Program plan extends to the absence of a program-level stakeholder plan. While each of the four projects have identified project specific stakeholders, they have used different approaches to categorise stakeholders. The degree to which end-users specifically have been identified, and their needs understood and reflected in project design varies significantly across projects." (Program Mid-Term Evaluation, 2020)*

This made it challenging for CRCC projects to complement each other in meeting user information needs relating to climate adaptation. This was highlighted by one interviewee who reported that the spectrum of CRCC projects, collectively, did not meet their information needs. While they found NARCliM difficult to use because of this interviewee's engineering-focused skillset, other outputs such as the Climate Risk Ready Guide and map available on the website were too 'high level' to meet their needs.

2.4.3 Principle 3: We provide this to the right people

> **Key finding**
>
> The extent to which the principle of 'we provide this [information, support and grants] to the right people' was adhered to varied across projects.
>
> The 'right users' for **Tools and Information** and **Adaptation Support** projects were not always defined with sufficient detail, and the definition of the 'right users' evolving. There was no available evidence on whether the projects reached the right types of actors within target sectors. Importantly, there was limited evidence of the projects engaging 'decision-makers' with the power to embed climate risk into decision-making in a sustainable manner.
>
> The **grants** process could have been set up to reach users with more acute needs and/or who will have a more substantive impact on climate adaptation.

The following section presents the extent to which the Program adhered to the principle of 'we provide this to the right people', and draws on assessments of the NARCliM, XDI, Climate Data Portal, Climate Ready Revegetation, AdaptNSW website, Enabling Regional Adaptation, Climate Risk Ready and Aboriginal Adaptation projects.

There is limited evidence on whether the "right" people were provided the information by **Information and Tools** projects, although there are examples of relevant end-users accessing the information.

The CCF Program Communications Plan v0.2 identified the following target audiences for **NARCliM**: government agencies, critical infrastructure and public utilities, insurance, business and innovation, planning and development, NGOs and advocacy groups, and academia (Helping communities to become more resilient to climate change – Climate Science Program Communications Plan Version 2.0, NSW Government 2019). While there was no dataset available for the full Program period, a Review of climate data requests (2018-2021) identified that those who requested NARCliM data came from sectors spanning across academia, consultancies, industry, and government. This indicates a general alignment of stakeholders reached with the target audiences.

However, the reach of **NARCliM** and the **Climate Data Portal** (which hosts the NARCliM data) was limited. From December 2020 to December 2022, NARCliM data was downloaded by 50 unique users. The State Agency Preparedness Survey (NSW Government 2023, n=75) identified that the **Climate Data Portal** was commonly used by 21% (or 15) of government agencies surveyed to assess climate change risks.

The small number of users who accessed these tools suggests room for increasing the reach of NARCliM and the Climate Data Portal. These tools were not extensively advertised. According to two interviewees out of twelve, users found them through Google, the AdaptNSW website, or word-of-mouth:

> *"We had names of people that we could reach out to, which then they put us in contact with people who could help us, that was fine, but I think if you didn't know people, it would be challenging. But having said that, maybe there's a Contact Us button and I just didn't use it." (NARCliM end-user)*

There was no available evidence to assess whether **XDI** was provided to the 'right people' apart from one project team interviewee rating XDI 2 out of 5 on how well it had reached targeted end-users.

There is evidence to say that XDI did reach government stakeholders, one of its target groups. The State Agency Preparedness Survey (NSW Government 2023) identified that 54 government agencies surveyed had accessed XDI and 9 had used it regularly to assess climate risks. This is consistent with the Managing Climate Risks to Assets and Services Audit (Audit Office of NSW 2021), which reported that some agencies examined had used XDI to generate asset reports while others were not aware of it.

The Managing Climate Risks to Assets and Services Performance Audit (Audit Office of NSW 2021) and three out of five interviewees noted the following limitations to XDI reaching 'the right people':

- the user-pays funding model and the Software as a Service arrangement

"That limited contract meant that they put forward a Software as a Service arrangement with people who wanted to use it, and then the feedback from stakeholders was that they didn't like that option, basically. Some users do use it as a Software as a Service arrangement, but there's only, basically, two or three, and it does take a while to negotiate those agreements internally." (XDI project team member)

- that the team must provide access to XDI due to the sensitivity of the information
- security and data sharing concerns.

"Transport hasn't loaded everything because they're very concerned about security things." (XDI end-user)

"Every agency's concerned about sharing that data with each other, even though we're government departments. I can understand the difficulty of that. Whether XDI develops something that's really fit for purpose from a government perspective is open to question." (XDI end-user)

The **AdaptNSW website** defined its audience as 'broad' and spanning across government, data modellers, business, households, communities, and the media. While there was no available evidence of whether the "right" people were reached by the AdaptNSW website, interviewees from several organisations across private consultancies, local and state government were aware of the website and had used the website. 53% (or 39) of government agencies surveyed reported regularly accessing the AdaptNSW website (State Agency Preparedness Survey, NSW Government 2023, n=75).

The website was accessed by 366,407 unique users during the Program period. Users tended to access the website by searching online or directly entering the website URL, suggesting that not all opportunities for reaching new users were explored. A marketing strategy was developed for the new website; however, it was never implemented.

The evidence on the reach of the **Climate Ready Revegetation** Guide was too limited to understand whether all the 'right people' were reached. The Climate Ready Revegetation Trials recruited participants through existing relationships and worked with groups that had shown a strong interest in climate ready revegetation, but there were only three participating groups.

The **Adaptation Support** was able to be provided to the right people when it was known who the right people were. Some interviewees said it was difficult to understand who the targeted end users were because there has been such an evolution over time of who is working in this space.

The **Aboriginal Adaptation** work was said to be able to meet the targeted end users in the three communities involved with the project. It was noted this work would expand to Traditional Owner

communities across the state in future and that the work was 'opportunistic', rather than larger scale and strategic, by working with several Aboriginal communities who already had established working relationships.

> *"We did promote it within different fields, but often it was using our own networks, for example, the joint custodians group, which are the joint management committees. That was where we were promoting the program. So that's where I would say it's not equitable. I justify it by saying that it was piloting it, but it ended up being for particular groups in this case, the joint management committees that benefited from the program."* (Aboriginal Adaptation project team member)

The **Enabling Regional Adaptation** work was conducted through the establishment of a steering group of different organisations and agencies who worked in the region who were able to connect with others across the region to *'get the right people into workshops'* (Enabling Regional Adaptation project team member). Interviewees who worked in delivering the Enabling Regional Adaptation work noted that the end users were the 'local decision-makers in the region'. Around 150-200 different stakeholders were involved for each of the ERAs developed (North Coast and Hunter Central Coast regions).

Similarly, the **Climate Risk Ready** work was designed for those primarily working for NSW State Agencies and LGAs needing to assess and manage climate change risks, with end users noting the guide and training were useful to assist in Climate Change Risk Assessments. The Program Mid-term Evaluation (Clear Horizon 2020) also noted that the Climate Risk Ready work was appropriately targeting the right stakeholders to influence change across the government. As mentioned in section 2.2.2, 80% (or 60) of government agencies surveyed had accessed the Climate Risk Ready NSW Guide and 73% (or 54) had accessed the Climate Risk Ready Training Course as guidance material to assist with climate change risk assessment, management, or adaptation (State Agency Preparedness Survey, NSW Government 2023, n=75). However, some interviewees for this evaluation noted that although the tools were useful, their organisations / agencies had their own tools to manage and mitigate climate change risk.

The **AdaptNSW Forums and Webinars** had 1,483 participants from 2018 to 2022. Forums and Webinars participants worked in a variety of sectors including Federal, State and Local Government, the Private Sector, NGOs, and Academia/Research, in line with target groups identified. Overall, 'government' was the most common sector participating in these events.

Where evidence was available, the Tools and Information and Adaptation Support projects reached many of their target sectors. However, there was no available evidence on whether they reached the right types of actors within these sectors. The limited contribution of the projects to embedding climate risk into decision-making in a sustainable and widespread manner (as highlighted in section 2.2.2) points to the limited reach of the projects to a key group of actors: those with the power to embed climate risk into decision-making in a sustainable manner. Two interviewees identified that NARCliM, for example, needed to better speak to 'decision-makers':

> *"Maybe the provision of more guidance materials for lay people, when I say lay people, not necessarily general public, but our policy officers and decision makers."* (NARCliM end-user)
>
> *"I think there's probably a bit more, I suppose marketing of the NARCliM data to agencies who make policy decisions and agencies who provide guidance to the public so that more people can actually understand the impacts of climate change and how it's going to impact them and their businesses and industries."* (NARCliM end-user)

Community grants were provided to successful projects, however as there were 234 applications, many which were rated highly by the evaluation panel, and only 23 grants administered, it can be assumed that there were a significant number of additional projects that would have filled the criteria for a community grant but missed out due to funding limitations. Although there was a strong governance process, the considerable variability in the scoring of the evaluation panel further undermines the confidence in the robustness/shared understanding of what a project that addresses the needs looks like. The number of community grant applications demonstrated an appetite and a need for climate change risk mitigation and adaptation across the State. However, there are concerns about the 'equitable distribution' of grants to communities due to the nature of the competitive grants process.

Due to the limitation of documents provided for **council grants**, it is difficult to determine from available evidence that the opportunity for councils to access the grants was equitable. Equity of access is considered in regard to the regional spread of grants. However, by creating a competitive grants process, this inherently puts a lot of 'high needs' councils who do not have the resources to apply for a grant at a disadvantage.

> *"We were concerned with geographical spread and ensuring that people were able to apply for grants, but I don't think putting up lower resourced councils against more well-resourced councils in a competitive grants process is the best way to reach them." (IRCC grant team member)*

It is worth noting that there were some supports in place to assist councils and communities with applications, such as providing laptops to areas which had lost infrastructure due to recent bushfires as well as advice on how to complete applications. However, as one interviewee noted:

> *"Under-resourced councils, usually small regional councils, often don't participate in the grants process. Even if they are successful in applying for a grant, the ongoing reporting process may present difficulties for them to manage. However, these councils would often benefit the most in progressing climate action by reducing risk and project co-benefits." (Acquittal Evaluation Report)*

2.4.4 Principle 4: We provide it at the right time

Key finding

The CRCC projects were delivered at the right time. Most end-users were able to progress their work without the projects but were pleased when the projects were delivered as they helped the quality of their work.

- The **Adaptation Support** was innovative and timely, as NSW was ahead of the country in delivering this type of work. As the challenges of climate change and extreme weather events in the State were prominent in the funding period (2018-2022), there was no time like the present to deliver this work.

- While some **Tool and Information** project activities were delivered later than anticipated, this was either to ensure the delivery of a better product or due to factors outside of the control of project teams. Generally, users were not too impacted by the delays and adapted accordingly.

The following section presents the extent to which the Program adhered to the principle of 'we provide it at the right time', and draws on assessments of the NARCliM, XDI, Natural Hazard Maps, AdaptNSW website, and Enabling Regional Adaptation projects.

The release of **Tools and Information** projects happened generally later than anticipated. However, end-users were still satisfied with their timeliness.

The delivery of the new **AdaptNSW website** and **XDI** took longer than anticipated but this did not seem to impact end-users. It is worth noting that a previous version of the AdaptNSW website was still available while the new website was being developed.

NARCliM 2.0 and the **Natural Hazard Maps** were not released during the CRCC Program (January 2018 – June 2022). Limited resources and the decision to use the new NARCliM 2.0 to inform the Natural Hazard Maps impacted the delivery. One out of two team members said that the timeline for NARCliM 2.0 had been unrealistic from the start. Producing a new version of NARCliM required significant resourcing including substantial computational power and time. Another stakeholder explained that the timelines for NARCliM 2.0 had been designed to fit funding requirements rather than the likely timeframe. The design was dependent on international efforts which had a high likelihood of delay or of requiring more work to make them locally relevant, and this was likely not to be feasible within the funding cycle. To mitigate this risk, the team focused on doing as much 'pre-work' as possible, understanding user needs, and delivering and improving the NARCliM 1.5 data.

> *"The initial project timelines that they had created for NARCliM 2.0 were not realistic. They were completely out of touch with reality. They omitted several dependencies." (NARCliM project team member)*

Most people interviewed about NARCliM were sympathetic and aware of the barriers to delivering a NARCliM product within the original timeframe.

> *"In relation to whole NARCliM project, it's been probably more than a year behind where it was meant to be, which is okay. I understand and we understand the reasons. It's, again, time of the supercomputer and the whole range of things means that things go slower than was originally anticipated. That's just the way life is. It would've been nice to have the other projections, the new projections earlier, but on the other hand, we've been pretty busy." (NARCliM end-user)*

The **Adaptation Support** was noted as being innovative and timely as there was no one else in the country at the time of this work providing similar support on climate change adaptation. It was also highlighted that climate change adaptation work is pressing and that there is no time like the present to be providing this kind of work.

The **Enabling Regional Adaptation** work was noted as being quite innovative and 'ahead of its time' (Enabling Regional Adaptation participant) in comparison to the rhetoric and sentiment of attitudes towards climate change across the country.

> *"Someone will pick up this report in ten years' time and go, "Wow, look where New South Wales Government went." […] It's the first of its kind in terms of delivering service… It's leading practice but it's still a hard thing to make change when ultimately, your community wants business-as-usual." (Enabling Regional Adaptation participant)*

Two out of six interviewees noted that the work was part of a 'pressing conversation' and that there was a 'reasonable amount of enthusiasm from the outset', but also noting that now is the right time to be talking about climate change adaptation 'not tomorrow or next week', so whenever it started was the 'right time'.

It was also noted that the work was timely in the context of the major weather events and natural disasters that were occurring in the state at the time of project delivery (including the drought, bushfires and floods) as it 'pushed climate change even more to the forefront for people' (Enabling Regional Adaptation participant).

2.4.5 Principle 5: We provide it in the right format

> ### Key finding
>
> The extent to which the principle of 'we provide this [information, support and grants] in the right format' was adhered to varied across projects. While many users were satisfied with the projects' format, there could have been further tailoring so the needs of important end-users are better met. It is worth noting that not all improvements could be realistically made considering resourcing constraints and content trade-offs involved.

The following section presents the extent to which the Program adhered to the principle of 'we provide it in the right format', and draws on assessments of the Climate Data Portal, NARCliM, XDI, AdaptNSW website, webinars and forums, Enabling Regional Adaptation, Climate Risk Ready, Aboriginal Adaptation and IRCC grant projects.

While users generally found the format of the **Tools and Information** projects useful, they also suggested improvements. It is worth noting that not all improvements could be realistically made considering resourcing constraints and content trade-offs involved.

The format of **NARCliM** datasets was generally adequate in that it was tailored to end-users. When NARCliM data is requested, the team works with users to provide the most appropriate dataset. One project team member spoke about the benefits of this approach:

> *"The people interested in the data putting in their request has been good for both sides, because we gain a better understanding of what their needs are and can provide better guidance on the data to use and how to use it. It also saves the frustration on their part for them having to sort through a whole bunch of different data." (NARCliM project team member)*

The format of the **Climate Data Portal** also ensures that the NARCliM data is available online to browse for anyone, supporting accessibility.

> *"By setting up the portal the way we did, at this point with that requesting access, it lets anybody come in and take a browse and see what data is there and gets a sense of like, 'Is this something that I'm going to be interested in?'" (NARCliM project team member)*

However, users raised suggestions relating to the format of NARCliM and the Climate Data Portal:

- One out of ten end-users would find it valuable to have more models and emission scenarios integrated into NARCliM.

> *"It is a small subset of the overall models that are out there, and it would be valuable to have more. The same goes for emissions. I think the emission scenarios that were picked are probably the most useful ones for us. […] But there's a whole range of other things that could happen with emissions that haven't been modelled." (NARCliM end-user)*

- Two out of ten end-users said that the information presented on the Climate Data Portal was difficult to understand if you were not a climate scientist.

"Just the architecture of how it was set up, I mean it wasn't useable, let alone the fact that there's no point accessing it unless you're basically a climate researcher, or can talk to climate researchers in their language." (NARCliM end-user)

- One out of ten end-users indicated that the Climate Data Portal had download limits.

"There were data limits, that it was cutting out when you downloaded something like 200mb, or some ridiculously small amount, given the size of the data." (NARCliM end-user)

- Two out of ten end-users found NetCDF difficult to work with.

"It would be brilliant if you could just go onto a website and select a point and it would give you like a text file or a CSV or something. You'd open it in Excel with the data for that particular point location. I think NetCDF is brilliant if you know how to use it and you're used to using it and you want to work with data across the whole of the state. But most of the time as an end user, we're more interested in localised point data." (NARCliM end-user)

- Three out of ten end-users found that the NARCliM data didn't meet their data needs for infrastructure projects.

"The NARCliM data and the portal itself doesn't really meet our needs anymore […] we're offering very discrete life cycles. The NARCliM portal provides obviously two or three trajectories of time which don't necessarily neatly fit within our asset management categories. The climate variables that are provided in the portal aren't necessarily everything that we need. There's only a few parameters or variables provided." (NARCliM end-user)

- Two out of ten end-users wanted projections beyond the 2080 timeframe.

We really want that information or some projections beyond the 2070, 2080 timeframe, even up to 2100 and beyond. Obviously, the data gets more inaccurate as you go down those timelines. But essentially, it doesn't do that either. We're having to make our own interpolations internally." (NARCliM end-user)

Still, interviewees said that having data available in all the different formats required would likely be unrealistic.

"Maybe if the department was resourced a bit better then they could have more people helping to access and make available and maybe tools to work with it, but I can't complain." (NARCliM end-user)

AdaptNSW website users generally found the website format useful and the information easy to understand but also had suggestions for improvement.

- Two out of six end-users found it difficult to find the information they were looking for on the website.

"I think for the AdaptNSW website and everything under that umbrella, the format is very easy to read. However, navigating from page to page, or trying to find the information you're looking for, wasn't always helpful. Visually, in terms of ability to digest the information on the page, I think they did a really good job." (AdaptNSW website end-user)

- Two out of six end-users also talked about wanting access to more detailed data through the website.

XDI's accessibility is enhanced through reporting outputs and results being available as csv files, enabling users to create their own outputs from the data. Users can access online training and a user guide to understand how to use the tool.

One out of four end-users and one project team member believed that improvements could be made to make **XDI** more user-friendly and accessible.

- One interviewee wanted XDI to better enable them to assess the vulnerability of a network of assets.
- Other enhancements, such as an automatic report feature, could be made to help users better interpret the data.

There were varying perceptions of the **Adaptation Support** being provided in the right format.

Two interviewees commented on the usefulness of the **AdaptNSW Forum**. One participant commented on the diversity of speakers and the value in having a willing and engaged audience, and another participant commented on how the webinars were useful in sharing information. All interviewees spoke to the AdaptNSW Forum being fit-for-purpose for the wide range of stakeholders who attend the forum, particularly to connect, network, share ideas and success stories about climate change adaptation across the state.

However, three out of four interviewees noted that the AdaptNSW Forums were difficult to access for regional stakeholders. The AdaptNSW Forums were held in Sydney, except for when it was held online (webinars) due to challenges around COVID-19 restrictions. This made it more accessible for one participant as they were able to attend the online sessions.

Three out of four interviewees noted the format of the multiple workshops to produce the **Enabling Regional Adaptation** work was a highlight, as described by one participant:

"…format of doing the work was really very useful because it was just all about getting people either in a room face-to-face where we could because of Covid and having really active and engaged discussions where people were able to join others with a similar outlook or expertise to build things that they understood and could get behind…That really helped maintain momentum and keep that format of – well, this is a dialogue that's building from what looked to be quite a highly-detailed and confused space into something that's going to provide them more clarity. That was workshopping and it worked quite well." (Enabling Regional Adaptation participant)

Participants also described the equitability and accessibility of the Enabling Regional Adaptation work. One discussed how the workshops particularly were quite equitable for those to participate in the region, with each of the workshops being held in a different area, to allow participants to not travel far each time a workshop was being conducted. No negative feedback was provided regarding travel or accessibility.

Another interviewee spoke about how the Enabling Regional Adaptation report was user-friendly. This person noted:

> *"I think it was really very accessible to all the government participants involved. It did seek to take a lot of very complex background information and structural information and interpret it in such a way that it was pretty user-friendly. Tables, diagrams, minimising the content and minimising the size of the final document." (Enabling Regional Adaptation participant)*

Aboriginal Adaptation project team interviewees highlighted the benefit of the flexible nature of the project, in which they have been able to address priorities and challenges that are important and significant to communities to allow them to 'drive it a lot more'.

Three out of six interviewees noted that the **Climate Risk Ready** work was quite intensive (both the guide and the training). It was noted that the 'full version' of the guide was 'pretty big' and although useful, the training was 'fairly intensive' with participants finding it 'difficult to get it all done in my day job'. It was recommended for a 'light version' of the guide and training to be created to cater to those who do not have the time. One out of five Climate Risk Ready training participant noted that although the structure of the course and the modules were great, it was suggested that the course focus on 'who' the course was targeting to tailor the content.

There were inherent equity issues with the way that communities and councils could access **grant funding**. Feedback on the community grants process noted that there were several challenges for community members to fill out their grant application forms, with 22 categories for suggestions (Feedback from IRCCC grant participants on the application process, NSW Government).

3   CONCLUSION AND RECOMMENDATIONS

3.1   Conclusion

The evaluation found that the CRCC Program contributed to the establishment of important foundations for climate risk adaptation and management. The development and dissemination of tools, information, and support contributed to building knowledge and capability for climate risk management and to instances of climate risk becoming better embedded into decision-making. Grant funding also supported on-ground adaptation actions. However, the lack of a coordinated, strategic approach to Program design and delivery limited the scale and, likely, the sustainability of these achievements. Improvements to the overarching authorising environment and governance structures through the Climate Risk & Resilience Strategic Roadmap may contribute to more widespread, strategic, and sustainable changes to climate risk management in the future.

The projects were found to generally adhere to the Program's guiding principles. They were based on the most up-to-date science and provided at the right time. However, the extent to which the projects reached the right users and met their needs varied across projects.

When evaluated against the evaluation rubric, the overall performance of the key findings was assessed as 'Fair'.

Importantly, the availability of relevant project-level data and insights to inform the evaluation varied across projects, limiting the extent to which evaluative judgements could be made for both those individual projects and for the overall Program.

3.2   Recommendations

1. **Actively map and engage end-users in the strategic design, delivery, and evaluation of climate adaptation projects.**

   The evaluation found the CRCC projects did not have a sufficiently detailed and documented description of their target end-users and associated needs. This limited the robustness of the evaluation of the effectiveness of each of the projects, as evidence of intended and actual use of information was either limited or absent. By actively mapping and engaging end-users throughout the design, delivery and evaluation of projects, there is greater opportunity to ensure the projects are effectively influencing intended outcomes (i.e., changes in knowledge, skills, behaviour and/or decision-making as opposed to just 'reach'), and that end-users are engaged in informing the continuous improvement of projects throughout delivery.

2. **Ensure strategic whole-of-Program governance and coordination is facilitating collaboration across projects and departments for greater impact.**

   The evaluation found that while the individual projects delivered important foundational work for climate risk management, the absence of strategic Program-level governance and coordination limited collaboration across the projects and the associated impact of these projects. Strategic Program-level governance and coordination should focus on ensuring consistency, alignment and integration of project design and delivery across departments (including in end-user and stakeholder mapping and engagement as outlined in Recommendation 1). This will enable the whole-of-program level outcomes to be achieved.

3. **Establish robust project and Program-level MERI.**

The ability of the evaluation to make robust judgements of effectiveness was limited by both a lack of routine project and Program level monitoring data, and the ability of project and Program staff to identify sources or stakeholders to fill these data gaps at the point of the evaluation. Project-level MERI should:

- be integrated into project planning and delivery as part of best practice project management
- primarily focus on capturing and using information to inform continuous learning and adaptation to ensure projects are effective and responsive
- focus on enabling the coordination and integration of projects to leverage and demonstrate Program-level outcomes and impacts.

4. **Deliver targeted communications and engagement activities to extend the reach and influence of the Adapt NSW Website and Forums.**

The evaluation found that the AdaptNSW Website and the Forums/Webinars were key mechanisms for disseminating climate adaptation information to stakeholders, and that there are opportunities to extend their reach and influence. For the Forums/Webinars, this is especially relevant to regional stakeholders. Strategic and targeted communications and engagement activities should be designed and delivered to respond to specific end-user needs (see Recommendation 1) to increase the reach, use and influence of the AdaptNSW Website and Forums/Webinars (these should also have corresponding MERI plans, as outlined in Recommendation 3). The evaluation surfaced a range of mechanisms that could be considered, including digital campaigns, partnership approaches and knowledge brokering arrangements (tailoring messaging to audience skill and knowledge).

5. **Expand training and capability building initiatives to engage target end-users with different levels of skill and climate risk management maturity.**

The evaluation found the training and capability initiatives were integral to supporting the uptake of the tools and information generated through the Program. Expanding these initiatives to engage a range of end-users with different levels of skill and maturity in climate risk management (informed by active engagement of end-users as outlined in Recommendation 1) would enhance the impact of both these initiatives and the tools and information products they support.

6. **Seek opportunities to further leverage the Enabling Regional Adaptation reports.**

The evaluation found the Enabling Regional Adaptation reports to be robust products for identifying priorities for climate risk adaption within target NSW regions, but that there was limited evidence that these had been implemented. Further work should be undertaken to understand how these products can be further leveraged to facilitate regional climate adaption activities and outcomes.

7. **Deliver strategic funding programs for climate risk adaptation across NSW.**

The achievements of the IRCC grant program demonstrated a continued need for funding support for councils and communities to support climate risk adaption, and an opportunity for funding mechanisms to be more strategic and aligned to stakeholder needs. The design of the climate adaptation funding mechanisms should accommodate lower-capability councils and communities to respond to climate change risks, and be informed by the staff, resource and capability barriers of these councils and communities, as well as their climate adaption needs (informed by active engagement with end-users as outlined in Recommendation 1).

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APPENDIX 1: PROJECT SUMMARIES

Aboriginal Adaptation

The Aboriginal Adaptation project aims to increase the capacity of NSW Aboriginal communities to discuss and consider adaptation decision-making. It aims to better enable communities to develop strategies to reduce impact of climate change on cultural practices and values.

The work is being delivered through a series of workshops conducted by DPE with Aboriginal communities, providing local information on climate change, how it works, and how it could impact cultural practice and values. This is helping the development of community-owned strategies for addressing climate change impacts.

AdaptNSW Forums and Webinars

AdaptNSW Forums began in 2013 to showcase the climate adaptation work of NSW, recognise and celebrate achievements, share and discuss ideas in climate change adaptation, build knowledge and inspire action. Forum delegates generally come from a variety of sectors including government, industry, higher education, consultancies, and the community. For the duration of the CRCC Program, three forums were hosted – in 2018, 2019, and 2022.

In 2020 and 2021, due to capacity limitations because of COVID19, the AdaptNSW Forum was replaced by AdaptNSW webinar series. Five webinars were hosted in 2020 and one in 2021. At the webinars, experts shared insights on a range of approaches to build the resilience of NSW to climate change.

AdaptNSW website

The AdaptNSW website informs, supports, and empowers a diverse audience to build their resilience to climate change by providing easy-to-understand climate adaptation information. The new AdaptNSW website was launched on the 1st of February 2022, with the previous website dating back to 2014. The AdaptNSW website can be accessed here: climatechange.environment.nsw.gov.au.

Climate data portal

The NSW Climate Data Portal provides data to registered users on projected and historical climate trends in NSW and south-eastern Australia. The portal hosts the NARCliM data and can be accessed here: climatedata-beta.environment.nsw.gov.au.

Users of the Climate Data Portal can search, select, and download datasets, or construct interactive selections to extract. They can choose locations, time periods and climate variables. These data requests are retained on the Portal and assembled into 'data collections' that can be viewed by other registered users of the Portal.

The Portal provides data in two formats: American Standard Code for Information Interchange (ASCII) and comma-separated values (CSV).

Climate Ready Revegetation

The Climate Ready Revegetation Guide was released in 2018 to provide guidance on using climate projections in revegetation projects. The Guide provides step-by-step instructions on where to find and how to use climate projections and how to consider the suitability of species and provenances for revegetation projects. As part of the CRCC Program, a Trial is being run so Landcare groups can implement climate-ready revegetation projects using the Guide.

Climate Risk Ready

Climate Risk Ready aims to help NSW Government reduce its exposure to climate risks and to facilitate a positive culture of climate risk management through leadership, policy integration and agency staff capability building.

Climate Risk Ready includes:

- the delivery of a Climate Risk Ready NSW Framework to enable agencies to prioritise and secure resources for climate change risk management
- a practical guide and training course to build staff capacity to assess and integrate management of climate risks
- collaboration and consultation activities to help build leadership of senior government stakeholders, to facilitate a positive climate risk management culture, embed climate change risk into existing Treasury risk management policy and co-brand deliverables, and create a peer network of climate change risk practitioners to support ongoing learning and continuous improvement across priority agencies.

Enabling Regional Adaptation

The ERA project began in 2008 to understand and address the climate change vulnerability of local and state government service delivery.

Through the project, each NSW region and the ACT were involved in a series of workshops. Participants worked in a range of government agencies including Local Government and State government.

The workshops helped identify the major systems of each region that are particularly vulnerable to climate change. Stakeholders identified parts of each system that are resilient to climate change, and parts that will need to change to be resilient in the future.

ERA reports were then produced for each region to present a vision for a climate-resilient future and opportunities for action.

The CRCC Program and this report cover the ERA work for the North Coast and Hunter Central Coast regions only.

IRCC Grants

The Increasing Resilience to Climate Change (IRCC) grants were allocated to community groups and councils to encourage:

- the implementation of actions to address identified climate risks

- regional consideration of climate change impacts in decision making

- the implementation of climate change adaptation actions beyond business as usual

- enhanced adaptive capacity.

Community grants from the NSW Government aimed to support community-led adaptation projects that assist in taking action to adapt to climate change. The scope included planning, preparing for, and responding to extreme climate events. A total of 23 community projects were funded to a total value of $600K.

Council grants were managed through a partnership program between LGNSW and the NSW Government. These aimed to address climate change risks and assist NSW councils to plan for, and respond to extreme weather events. This funding was awarded to 32 councils and regional groups of councils over three funding rounds to a total value of $2.8 million.

NARCliM

NARCliM stands for the 'NSW and Australian Regional Climate Modelling'. **NARCliM 1.0** was released in 2014 using Australia's largest supercomputer. It produced climate projections at a 10-km grid cell resolution across south-east Australia and a 50-km grid cell resolution over Australasia. One historical projection and two future projections (2020 – 2039 and 2060 – 2079) are available through NARCliM 1.0. The model is based on global climate models from 2006.

NARCliM 1.5 was released in 2020 under the CRCC Program. This was feasible due to improvements in computing power and the availability of newer models and processes. At the time of launch, NARCliM 1.5 used the most current and widely available global climate models. NARCliM 1.5 provides one historical projection and 150 years of continuous future projections (1950 – 2100) on the same grid as the original NARCliM using two different future greenhouse gas concentration scenarios.

NARCliM 2.0 was originally planned to be released in 2022 but is now planned for 2023. It will provide datasets at an even finer scale (4km and 20km) and multiple future climate scenarios.

XDI

The NSW Government's XDI (Cross-Dependency Initiative) helps public and private sector stakeholders understand the impacts climate change may have on infrastructure. It also helps identify interdependencies between assets to provide collaborative adaptation options for infrastructure owners and operators.

XDI brings together geospatial hazard maps, climate change impact projections, engineering data and financial analysis to identify risks and cost benefit analysis for adaptation planning. Stakeholders can use the platform directly or access tailored reports.

The project was led by DPE under the CRCC Program, and the platform is supplied by a private provider.

APPENDIX 2: KEY EVALUATION QUESTIONS

Key evaluation questions (KEQs) developed through the CRCC Facilitated Review (2022). These questions guided the data collection for this evaluation. Table 6 presents the KEQs and sub-KEQs and in what section they were addressed in the report.

Table 6 Key Evaluation Questions mapped to their relevant sections in the report

KEQs and Sub-KEQs	Report section where the KEQ was addressed
1. How effective were the information and tools produced by the program in achieving the desired outcome?	
1.1 How well did the information and tools produced by the program reach the right people?	2.4.3
1.2 To what extent were the information and tools provided at the right time?	2.4.4
1.3 To what extent the information and tools presented in the right format?	2.4.5
1.4 To what extent were the information and tools underpinned by the right science?	2.4.1
1.5 How have the information and tools been used to make decisions?	2.2.2
1.6 How accessible were the information and tools to the target audiences?	2.2.2
2. How effective was the adaptation support provided by the program in achieving the desired outcome?	
2.1 How well was the adaptation support designed to meet the end user needs?	2.4.1, 2.4.2, 2.4.3, 2.4.4, 2.4.5
2.2 To what extent was the adaptation support effective in addressing the capability issues?	2.2.2
2.3 To what extent have participants applied their learnings?	2.2.2
2.4 How equitable was the opportunity of those prioritised to participate in adaptation support activities?	2.4.5
3. How important was the provision of grants in removing barriers to the achievement of the desired outcome?	

KEQs and Sub-KEQs	Report section where the KEQ was addressed
3.1 To what extent were grants the most appropriate method of overcoming the resource barriers?	2.2.3
3.2 To what extent did the criteria to access the grants effectively target identified needs?	2.4.3
3.3 To what extent were the grants of sufficient value to meaningfully address the barriers?	2.2.3
3.4 How equitable was the opportunity for councils to access the grants?	2.4.5, 2.4.3
3.5 How equitable was the opportunity for communities to access the grants?	2.4.5, 2.4.3
4. How effective was the program at enabling climate risk to be integrated into government agency decision making?	
4.1 To what extent did the program help establish or inform governance structures to support adaptation or climate risk management?	2.2.1, 2.2.2
4.2 To what extent did the program help establish an authorising environment that enabled better climate risk management?	2.2.1, 2.2.2
4.3 To what extent did the program help organisations develop policies or guidance that support climate risk management?	2.2.1, 2.2.2
5. How effective was the combination of information and tools, adaptation support, grants, and the removal of policy and regulatory barriers to support government, households, businesses and the community to manage and adapt to risks posed by climate change and extreme weather events?	2.1, 2.2.1
6. What were the unintended outcomes (positive/negative) of the program?	2.3

APPENDIX 3: EVALUATION RUBRICS

Standard	Description
Information and tools	
Good	The design of the information and tools reflected that the end users and their needs were well understood. End users consistently found the tools accessible, timely, and fit for purpose. There is extensive evidence that the information and tools were used by government, businesses and the community manage risks posed by climate change and extreme weather events.
Fair	The design of the information and tools reflected that the end users and their needs were understood to some extent. End users sometimes found the tools accessible, timely, and fit for purpose. There is some evidence that the information and tools were used by government, businesses and the community manage risks posed by climate change and extreme weather events.
Area for improvement	The design of the information and tools did not reflect that the end users and their needs were understood. End users rarely found the tools accessible, timely, and fit for purpose. There is minimal evidence that the information and tools were used by government, businesses and the community manage risks posed by climate change and extreme weather events.
Adaptation support	
Good	The adaptation support was designed in a way that directly targeted the needs of the end users. The support was highly effective in addressing the capability issues. There is extensive evidence that participants have applied their learnings.
Fair	The adaptation support was designed in a way that targeted the needs of the end users to some extent. The support was somewhat effective in addressing the capability issues. There is some evidence that participants have applied their learnings.
Area for improvement	The adaptation support was designed in a way that targeted the needs of the end users to only a limited extent. The support had a limited effect in addressing the capability issues. There is little evidence that participants have applied their learnings.
Grants	
Good	The use of grants was the most appropriate method to address the resource barriers. The design of the grants criteria ensured the majority of the funding was directed to where it was needed. The value of the grants was highly effective in addressing the resource barrier meaningfully in the context of the relevant constraints.
Fair	The use of grants was somewhat effective in addressed the resource barriers. The design of the grants criteria enabled some of the funding was directed to where it was needed. The value of the grants was somewhat effective in addressing the resource barrier meaningfully in the context of the relevant constraints.

Standard	Description
Area for improvement	The effectiveness of grants in addressing the resource barriers was limited. The design of the grants criteria was limited in directing the funding to where it was needed. The value of the grants was limited in addressing the resource barrier meaningfully in the context of the relevant constraints.
Climate risk informed decision making	
Good	Numerous governance structures have been established that have resulted in adaptation or climate risk management being embedded in decision making. Numerous authorising environments have been influenced that have enabled better climate risk management. There are numerous instances of organisations that have developed policies and/or guidance that is supporting climate risk management.
Fair	Some governance structures have been established that have resulted in adaptation or climate risk management being embedded in decision making. Some authorising environments have been influenced that have enabled better climate risk management. There are some instances of organisations that have developed policies and/or guidance that is supporting climate risk management.
Area for improvement	There is limited evidence that governance structures have been established that have resulted in adaptation or climate risk management being embedded in decision making. There is limited evidence that authorising environments have been influenced that have enabled better climate risk management. There are limited instances of organisations that have developed policies and/or guidance that is supporting climate risk management.
Overall	
Good	The program design reflects an adept understanding of the needs of the end users it was targeting. The quality and combination of fit for purpose information in tools, in combination with grants, and capacity building activities have been highly effective in supporting government, businesses and the community manage risks posed by climate change and extreme weather events.
Fair	The program design reflects a reasonable understanding of the needs of the end users it was targeting. The quality and combination of fit for purpose information in tools, in combination with grants, and capacity building activities has been somewhat effective in supporting government, businesses and the community manage risks posed by climate change and extreme weather events.
Area for improvement	The program design reflects that the needs of the end users it was targeting could be better understood. The quality and combination of fit for purpose information in tools, in combination with grants, and capacity building activities had a limited effect in supporting government, businesses and the community manage risks posed by climate change and extreme weather events.

APPENDIX 4: DATA COLLECTED

| Data collection method	Data sources	Number	To provide evidence of
Document review	Project plans, communication and stakeholder engagement plans, project evaluations, program logics, grant eligibility criteria, project fact sheets, evaluation responses, engagement and reach data, project strategies, project outputs, project case studies, survey data	186	• Program design • Outcomes achieved • Adherence to Program principles • Lessons learned
Website data	Google Analytics	N/A	• AdaptNSW website reach and engagement
Semi-structured interviews	Participants including project leads and end-users	34	• Project design • Outcomes achieved • Adherence to Program principles • Lessons learned
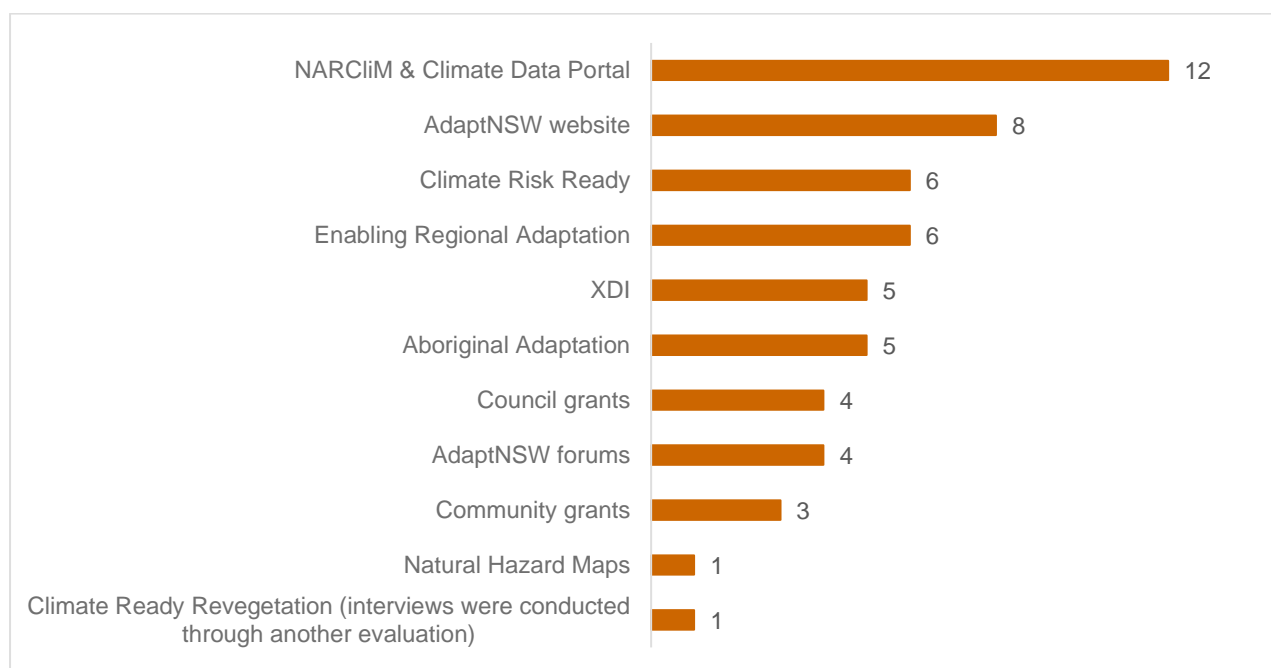
Figure 3 Number of interviewees for each project (n=34)

APPENDIX 5: CRCC PROJECTS RELEVANT TO EACH PRINCIPLE

Project	Principle 1: We do the right science	Principle 2: We transform this into the right information	Principle 3: We provide this to the right people	Principle 4: We provide it at the right time	Principle 5: We provide it in the right format
Tools and information					
Climate Data Portal			X		X
Natural Hazard Maps (not released)				X	
Climate Ready Revegetation	X	X	X		
NARCliM	X	X	X	X	X
XDI	X	X	X	X	X
AdaptNSW website		X	X	X	X
Adaptation support					
Enabling Regional Adaptation	X	X	X	X	X
Climate Risk Ready		X	X		X
Aboriginal Adaptation		X	X		X
AdaptNSW forums and webinars		X			X
Funding					
IRCC Council and Community Grants		X	X		X