

Name of Institution: *National Climate Change Adaptation Research Facility (NCCARF)*
Country of focus: *Australia*

Submission Ecosystems, interrelated areas such as water resources and adaptation.

This submission provides a brief overview of relevant activities related to ecosystems and adaptation carried out over the past three years by NCCARF.

Australia's National Climate Change Adaptation Research Facility is based at Griffith University. The Facility has been funded since 2008, and is currently in its second phase of funding. Our current work focuses on three key areas, and includes:

- a) A tool to guide local and state governments and other organisations in making better decisions about managing risks from coastal climate change;
- b) Relevant and accessible climate adaptation material - synthesising research for policy and decision makers;
- c) Operation of four adaptation research networks including: natural ecosystems, settlements and infrastructure, social, economic and institutional dimensions and vulnerable communities (including human health).

This submission details how the various components of our work relate to the three topic areas listed in the call for submissions.

1. Adaptation planning processes addressing ecosystems and interrelated areas such as water resources

[CoastAdapt: supporting coastal adaptation](#)

NCCARF has developed an online adaptation resource to support climate adaptation planning and implementation on the coast. The resource, called CoastAdapt is a website that addresses all coastal issues and challenges - from ecosystems adaptation through to adaptation of human settlements, businesses and industry. The demand driven tool has been developed following consultation with over 700 stakeholders, and regular engagement with potential users from all levels of government, business and industry.

CoastAdapt is delivered through the web, and includes information, data, guidance, case studies and tools which will support users to:

- Learn about climate change
- Assess risks and impacts
- Understand adaptation
- Undertake adaptation
- Connect with the adaptation community

Some key components of CoastAdapt are:

- **[Sea-level rise and you](#)** - which allows users to obtain sea-level rise data and inundation mapping for local government areas around coastal Australia
- **[Shoreline Explorer](#)** - which provides information on secondary sediment compartments around Australia, coastal geomorphological data (SmartLine), and Water Observations from Space
- **[CoastExchange](#)** – an online forum where participants can share experiences and information, participate in discussions and quizzes and ask questions to experts

- Case studies, - a compendium of over 50 case studies from Australia and abroad showcases real-life adaptation, illustrate concepts and provide insights about what is being done by practitioners.

A key focus has been on helping decision makers overcome barriers, and we have put extensive effort into developing guidance material on communication, [getting organisational buy-in](#), [working with consultants](#), [developing business plans for adaptation](#) and novel ways of [financing adaptation](#).

With over 200 pieces of content, CoastAdapt includes information on ecosystem services, ecosystem-based solutions, adaptation pathways, and has a strong focus on integrated solutions. It has been developed to enable stakeholders manage the risks of climate change that are relevant to them. It can be used by natural resource managers, but also by local governments, community groups and infrastructure managers.

CoastAdapt includes an iterative decision support framework known as Coastal Climate Adaptation Decision Support ([C-CADS](#)). The framework guides users through a process to identify their adaptation challenge, address the challenge, undertake risk assessments, identify solutions, assess solutions, implement these solutions and monitor and evaluate outputs and outcomes.

CoastAdapt includes a broad range of data, information, guidance material and case studies. Relevant information includes:

- an Information Manual on [Climate Change Adaptation Planning for Natural Ecosystems](#)
- information on [estuaries under climate change](#)
- information on [beaches and beach dynamics under climate change](#)
- information on [ocean acidification](#)
- information about [impacts on coastal freshwater ecosystems and biodiversity](#)
- information on impacts on [coastal fisheries and aquaculture](#).

Case studies include:

- [Kakadu Wetlands](#)
- [Saltmarsh adaptation on the Hunter Estuary](#)
- [Impacts of sea-level rise on natural values in Tasmania](#).

CoastAdapt can be accessed at www.coastadapt.com.au. Output includes web pages, pdf documents, maps, spreadsheets, word based templates, and infographics.

As part of developing CoastAdapt, NCCARF funded a research project about ecosystems on the coast. The project: Exploring valuation methods for climate adaptation options, with particular reference to Australian coastal councils, was aimed at helping decision makers overcome challenges such as valuing coastal wetlands and ecosystems in their decision making processes.

This report can be accessed [here](#).

Synthesising research to support decision makers

During the first phase of NCCARF, approximately A\$35 million was invested into research in a variety of areas. This led to the delivery of a large number of complex reports and research

outcomes, which were informative but somewhat inaccessible to busy or non-technical users. As a result, part of Phase 2 of NCCARF focussed on synthesising information from these reports, and others that had been produced since, and delivering them in relevant, accessible and understandable ways to user communities.

A report has been published focussing on [Terrestrial Ecosystems](#), and reports on marine ecosystems and freshwater ecosystems are being prepared.

Policy Information Briefs

NCCARF also worked with experts in key climate change challenge areas in Australia, to develop policy information briefs. The briefs are aimed at policymakers in state and federal government. In each brief, we examine challenges and their causes (both climatic and, in the broadest sense, environmental). The briefs explore the extent to which adaptive capacity exists, and what is needed for mobilisation. Adaptation options are considered and evaluated that account for financial and welfare costs of action and the avoided impacts.

Relevant briefs include:

- [The Great Barrier Reef](#)
- [Climate Adapted Northern Development](#)
- [Sustainable and thriving rural communities under climate change.](#)

NCCARF's Natural Ecosystems Network

The Network brings together the people and knowledge from previous Freshwater, Marine and Terrestrial Biodiversity Adaptation Research Networks established during NCCARF Phase 1. The overall mission of the Network is to provide decision-makers with information to develop and implement strategies that will minimise the impacts of climate change on Australia's Natural Ecosystems. The Network includes a focus on terrestrial, freshwater and marine ecosystems. Activities include capacity building of young researchers and practitioners, updating the National Climate Adaptation Research Plans to identify national research priorities in the three ecosystems of interest, and holding workshops to integrate knowledge on key ecosystem themes.

Further information on the Network can be accessed [here](#).

The draft National Adaptation Research Plans can be accessed [here](#).

Supporting climate adaptation in wetlands

NCCARF supported and contributed to the development of a paper on policy considerations for managing Ramsar wetlands under climate change. The paper draws upon the experience and lessons of wetland researchers and managers in Australia and New Zealand, examines the implications of climate change for wetland policy and management, and identifies potential adaptation responses and the information needed to support these. A set of principles was developed to guide adaptation of wetland conservation and management policy to climate change. The paper "Policy considerations for managing wetlands under a changing climate" has been accepted for publication in the journal Marine and Freshwater Research. A copy of the paper can be provided on request.

Supporting adaptation planning in regional natural resource management

NCCARF worked with CSIRO researchers to produce guidance and support for natural resource managers to incorporate climate change adaptation into their natural resource management plans. The resource "[The NRM Adaptation Checklist: Supporting climate adaptation planning and decision making for regional NRM](#)" is available as a stand alone document.

2. Monitoring and evaluating the implementation of ecosystem based adaptation

CoastAdapt and its associated C-CADS framework (see above) includes guidance on identifying performance and threshold indicators, adaptation pathways, and associated monitoring and evaluation.

NCCARF also funded a research project on monitoring and evaluation of climate change adaptation. The report can be accessed [here](#).

3. Tools for assessing the benefits of mitigation and adaptation to enhancing resilience and emissions reductions that ecosystems based adaptation provides.

NCCARF has not conducted any specific work in this area, although guidance in CoastAdapt does emphasise the importance of considering mitigation and adaptation together when developing and prioritising integrated solutions.