SOUTHERN SLOPES CLIMATE CHANGE ADAPTATION RESEARCH PARTNERSHIP

CLIMATE CHANGE IN AUSTRALIA

IMPACTS & ADAPTATION INFORMATION FOR AUSTRALIA'S NRM REGIONS

Southern Slopes Climate Change Adaptation Research Partnership (SCARP)

Project Information Summary Sheet

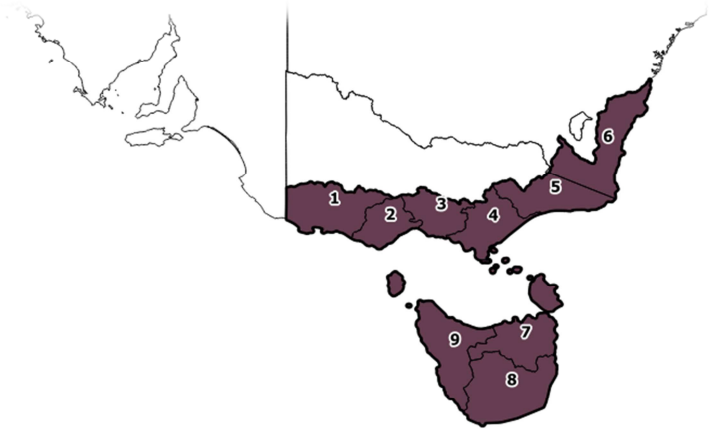
INTRODUCTION

The Southern Slopes Climate Change Adaptation Research Partnership (SCARP) has been working since March 2013 to advance planning for climate change in collaboration with our nine Southern Slopes Cluster (SSC) NRM partner organisations. SCARP activities have facilitated access to useful climate change science and adaptation information designed to support NRM partners in their adaptation planning processes.

As indicated in the map below, SCARP's NRM partners comprise five Catchment Management Authorities (CMAs) from coastal Victoria, the three Tasmanian Natural Resource Management (NRM) organisations and the South East Local Land Service (LLS) from south-east NSW. SCARP was originally funded under the federal government's Natural Resource Management Planning for Climate Change Fund (NRM Fund).

1. Glenelg-Hopkins CMA
2. Corangamite CMA
3. Port Phillip and Westernport CMA
4. West Gippsland CMA
5. East Gippsland CMA
6. South East Local Land Services*
7. NRM North
8. NRM South
9. Cradle Coast NRM

* Pre-2014 Southern Rivers CMA boundary shown



Research Approach

SCARP's approach is 'demand-driven participatory action research', involving iterative and collaborative development of relevant research with the needs and capacities of end-users; designed to create useable knowledge for NRM decision-makers. As a consortium of inter-disciplinary researchers, extension professionals and knowledge-brokers, the project team has collaborated with our SSC NRM organisations to:

- Identify the cluster's collective and individual climate change information needs and draw on a consortium of applied scientists to meet these needs where practicable.
- Provide regionally relevant planning tools and processes that have facilitated planning to address prioritised climate change adaptation issues.
- Share information and key lessons across the cluster and nationally through the NRM Fund program.
- Build on existing capacities and support development of new skills in using climate change impacts and adaptation information in NRM plans and planning processes.

First phase

The research team's initial focus was to assess existing strategies, plans and data to identify the adaptation capacities and needs of the SSC. This process included desktop analysis of existing plans, workshops, interviews and extensive informal dialogue amongst researchers and NRM staff. The first 18 months of the project involved working closely with NRM organisations to provide information on climate change, its impacts and adaptation options. Through this collaboration, the research identified four key focus areas for the project's second phase to support these organisations in developing their climate change plans.

Second Phase

The project's second phase of the SCARP project focused on four key sub-projects:

SP1. An adaptation pathways approach to NRM planning for climate change

This sub-project integrated other information and activity by supporting the development of capability amongst NRM planners to identify and use 'adaptation pathway planning' tools and frameworks to inform NRM planning for climate change. This included engagement to inform plan development and implementation.
Leaders: Dr Karyn Bosomworth and Dr Andrew Harwood

SP2. Spatial adaptation priorities for NRM implementation

This sub-project supported spatial analysis with our NRM's, including review of carbon sequestration methodologies, assessment of different approaches to prioritising landscape revegetation, and facilitating meetings between relevant experts and CMA representatives to define appropriate model specification for different spatial analysis questions. *Leaders: Dr Peat Leith, Dr Philip Wallis and Liz Hamilton*

SP3. Climate Change Impacts Synthesis and Assessment

This sub-project synthesised the vast and complex literature identifying key climate change impacts for NRM regions across the Southern Slopes. It is tightly linked with SP's 2 and 4 and enables exchange and collation of knowledge, information, experience and wisdom across the cluster. *Leaders: Dr Philip Wallis and Dr Peat Leith*

SP4. Learning and knowledge brokering for NRM adaptation

This sub-project brought together representatives from the nine NRM organisations with the SCARP team and other relevant climate change, adaptation and NRM researchers. Key events including workshops, teleconferences, webinars and meetings are used to advance collaborative work on specific issues in response to the needs and priorities of the Southern Slopes NRM agencies. This sub-project substantially contributes monitoring and evaluation across SCARP*. Leader: Liz Hamilton*

These sub-projects were developed, in part, using a web-based, interactive **Southern Slopes Information Portal,** which allowed interim outputs to be tested for usefulness and useability; allowing our NRM partners and their consultants timely access to information and input on the format and content as it was being developed.

Key Outputs

The project produced a series of key resources for the Southern Slopes NRM organisations that may also be of use to others with an interest in NRM adaptation planning. The reports and other key outputs, alongside those of the other Clusters, can be downloaded from the Southern Slopes Cluster section of the Climate Change in Australia website, or under the Southern Slopes Collection on Terra Nova website, or via these direct links:

Adaptation Pathways: a playbook for developing options for climate change adaptation in natural resource management

This report presents an approach to climate change adaptation planning known as adaptation pathways and guides users through five broad activities that make up an approach to pathways planning for climate change. Much like a summary guide, the playbook sets the context for SCARP's approach to adaptation planning.

Southern Slopes Information Portal Report: climate change adaptation information for natural resource planning and implementation

This peer-reviewed report is a key reference document to inform the development of regional NRM strategies, operational plans and even the development of specific programs and projects. Structured around the broad 'stages' of a pathways approach to adaptation planning, it provides planners with wide-ranging and detailed information regarding NRM relevant climate change exposures, sensitivities, impacts, uncertainties, as well as potential mitigation and adaptation options.

A review of carbon sequestration in vegetation and soils: opportunities and barriers for the Southern Slopes Cluster NRM organisations

This report focuses on ways of sequestering carbon in aquatic and terrestrial environments, as well as ways of maintaining and preventing loss from existing stocks of stored carbon in the environment. Sequestration activities that are within the sphere of activities relevant to SSC NRM organisations are examined.

A means-to-an-end: a process guide for participatory spatial prioritisation in Australian natural resource management

Spatial prioritisation for NRM in Australia aims to support decisions about where scarce resources should be invested to create the best possible outcomes. Many NRM objectives or goals require identification of regions and then localities for such investment. This guide was developed through action research with Tasmanian NRM organisations to help to address such 'where' questions. The report is intended as a working document for ongoing adaptation and refinement, as spatial prioritisation for NRM planning and implementation evolves.

An Adaptive Capacity Guide Book: assessing, building and evaluating the capacity of communities to adapt in a changing climate

A capacity to adapt to change is essential for managing Australia's natural resources. Changes in climate, markets and technology have shaped the way we adapt the management of natural resources in urban, rural and coastal landscapes. Some of these changes are predictable and easy to manage; whilst the timing and magnitude of some changes are uncertain. Whatever the future holds, this guide can be used to build our capacity to meet future change with confidence.

Current issues assessment tool

SCARP has developed this excel spreadsheet template that can be adapted to assessing the current situation for an NRM asset, system or sub-region/catchment. It comprises a series of questions that can be used to collate and consolidate relevant information to assist with adaptation planning and MERI for a specified objective.

SCARP's Project Governance

In collaboration with our CMA/NRM partner agencies, SCARP is led by:

- Tasmanian Institute of Agriculture (TIA) at the University of Tasmania,(UTas) in conjunction with
- Melbourne University, (UoM)
- Monash University, and

- Department of Economic Development, Jobs, Transport and Resources, (Vic).

Various other agencies have supported the research consortium, primarily the: Centre for the Environment (University of Tasmania), Institute of Marine and Antarctic Studies (UTas), Victorian Centre for Climate Change Adaptation Research, (VCCAR), University of Technology Sydney, Office of Environment and Heritage, (OEH), Dept. of Primary Industries, Parks, Water & Environment (as), Department of Environment Land, Water and Planning (Vic).

The Research Team

Peat Leith, Peat.leith@utas.edu.au, TIA led the project and was the primary contact for The Tasmanian and NSW NRM organisations. From August 2015, Andrew Harwood will be SCARP's project lead: Andrew.Harwood@utas.edu.au

The research team includes:

- Karyn Bosomworth, Royal Melbourne Institute of Technology (RMIT) University; karyn.bosomworth@rmit.edu.au
- Liz Hamilton, Department of Economic Development, Jobs, Transport and Resources; liz.hamilton@ecodev.vic.gov.au
- Phil Wallis, Monash University; phil.wallis@monash.edu
- Kerry Bridle, TIA; kerry.Bridle@utas.edu.au

The Steering Committee

Project governance is overseen by a project steering committee comprised as follows:

- Independent Chair: Christine Forster - Environmental Farmers Network
- CMA/NRM representatives: Kevin Wood - Glenelg Hopkins CMA, Victoria, Rex Candy - East Gippsland CMA, James McKee - NRM North Tasmania and Kristy Moyle - South East Local Land Services, (LLS) (NSW)
- Research consortium members: Rohan Nelson - UTas, Rod Keenan, UoM and (formerly) VCCCAR, Christopher Lee - OEH, (NSW)
- Secretariat: Peat Leith, TIA and Karyn Bosomworth, RMIT.

Background on the Department of Environment's Regional NRM Planning for Climate Change Fund

The SCARP project is part of the larger federal government's Regional NRM Planning for Climate Change Fund (NRM Fund) which provides funding over four financial years (2013 -2016), to improve regional planning for climate change across Australia. The aim is to improve the capacity of regional NRM organisations to plan for climate change and capitalise on opportunities such as the federal government's Emission Reduction Fund. The NRM Fund comprises two Streams:

Stream 1 supports the 53 regional NRM organisations across Australia to develop or revise existing regional NRM plans to help identify where in the landscape adaptation and mitigation activities should be undertaken. Updated and new climate change impact and adaptation plans are being produced in a variety of formats. For current information, refer to individual CMA/NRM/LLS websites.

Stream 2 supports the coordination of research to produce regional level climate change information to support medium term, regional NRM and land use planning. Stream 2 is being delivered through two elements:

Element 1 has delivered a new suite of regional climate projections for the whole of Australia. CSIRO lead this project in collaboration with the Bureau of Meteorology. The SCARP project team have worked closely with NRM organisations and relevant research communities to ensure climate change projections supported the medium-term needs for regional climate change planning.

A major output from this project has been the Climate Change in Australia website and includes the following:

- *Regional Climate Change Explorer* which includes projections and key messages for all regions of Australia. These are available as detailed regional NRM climate change projections technical reports and summary brochures.

- *Climate Analogues Tool* helps users find towns with a current climate that matches the future

climate of a selected site. For example, the user can select Ballarat, and ask what it would look like under (a) a warming of X °C and rainfall change of Y % or (b) a plausible climate change scenario for a given year and emission scenario. Australia wide there are over 100 sites included.

- *Thresholds Calculator* allows users to explore projected changes in the annual-average number of days above or below selected thresholds for maximum and minimum temperatures at over 100 sites.

- *Australian Climate Futures* is a flexible, multi-purpose decision-support tool to assist understanding and application of climate change projections for impact assessment and adaptation planning. It provides a unique way of exploring regional climate projections by allowing users to explore the projected changes in two climatic variables simultaneously. By using Climate Futures in conjunction with other tools available on this site, registered and trained users can obtain a range of datasets to suit their needs.

- *Map explorer* – This tool allow users to produce a map of climate projections for individual climate models across a range of variables, time periods and emissions scenarios. Users can zoom into regions of interest and download data in different formats.

Element 2 enabled research institutions to work with eight regional NRM/CMA 'Clusters' across Australia to deliver information on climate change impacts and potential adaptation responses and provided guidance on how to use that information in NRM planning. SCARP is part of Stream 2, Element 2 of the NRM fund.

More information about the two Streams and Elements can be found online at *Regional Natural Resource Management Planning for Climate Change Website*

Relevant Websites

CSIRO Climate Change in Australia Website:
www.climatechangeinaustralia.gov.au/en/

Department of Environment: Regional Natural Resource Management Planning for Climate Change Website:
www.environment.gov.au/cleanenergyfuture/regional-fund
Regional Climate Change Explorer, CSIRO Climate Change in Australia Website:
www.climatechangeinaustralia.gov.au/en/climate-projections/future-climate/regional-climate-change-explorer/clusters/

Terra Nova – The Australian Climate Change Adaptation Information Hub website:
www.terranova.org.au/

An Australian Government Initiative
Tasmania Explore the possibilities
State Government Victoria Department of Environment and Primary Industries
NRM North Natural Resource Management in Northern Tasmania
Port Phillip & Westernport CMA
NSW Government Office of Environment & Heritage
NSW Government Local Land Services South East
Glenelg Hopkins CMA
Cradle Coast NRM
Institute for Sustainable Futures
UTS University of Technology, Sydney
CORANGAMITE CMA
tia Tasmanian Institute of Agriculture
nrm SOUTH Natural Resource Management
West Gippsland Catchment Management Authority
East Gippsland Catchment Management Authority
vcccar victorian centre for climate change adaptation research

PROJECT PROCESSES AND TIMELINES

The SCARP project has been staged to allow for demand-driven research that aims to meet the needs of our NRM partners in preparing their climate change impact and adaptation plans and planning processes.

The stages are as depicted below: