Adaptation research informing policy and practice: lessons from a university-government partnership in Victoria, Australia

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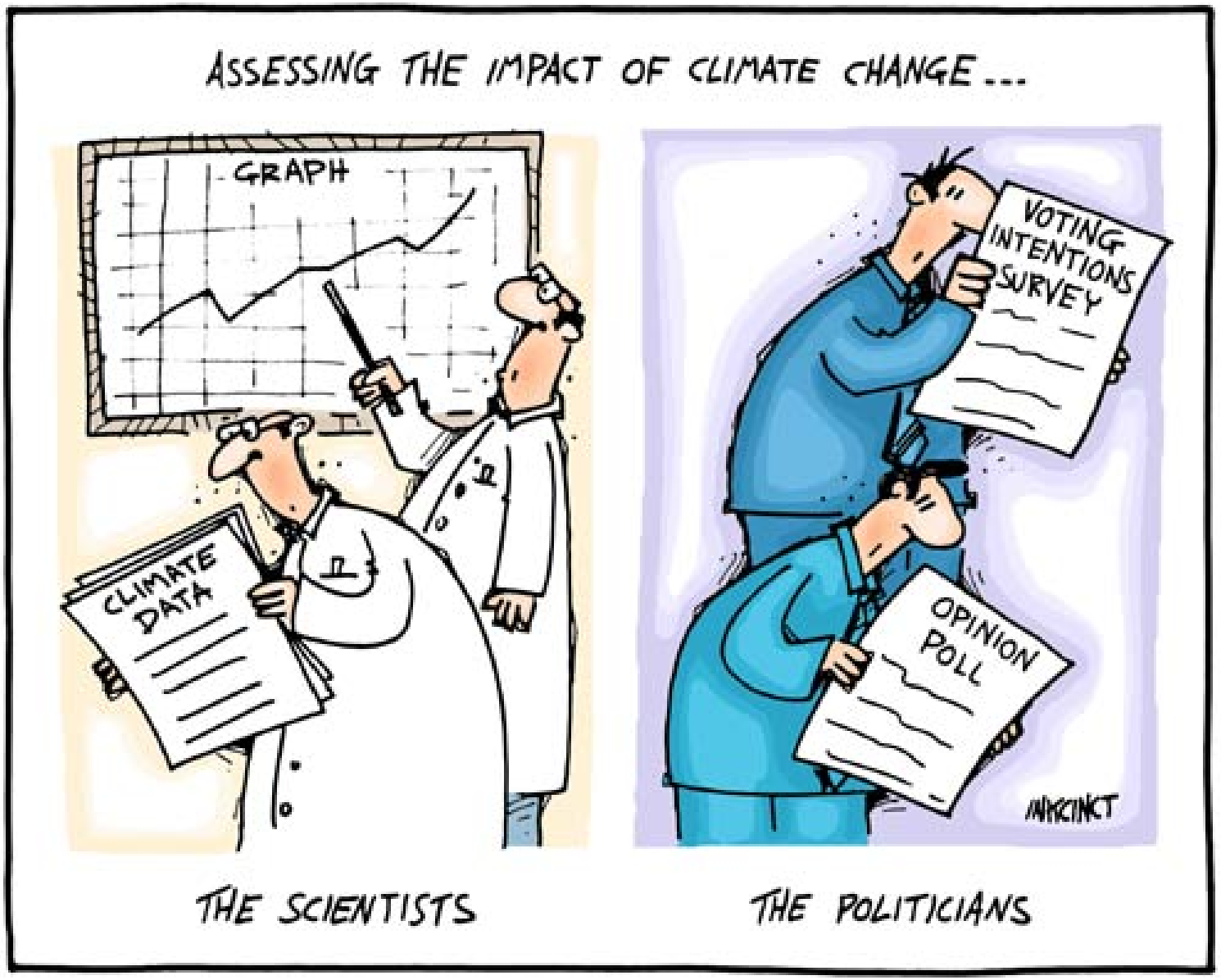
Outline

- Climate policy
- Australia
- Victoria
- VCCCAR and how we've operated
- Policy context
- Examples of research
  - Urban Heat
  - Adaptation planning
  - Implementation
- Learning and reflection


ASSESSING THE IMPACT OF CLIMATE CHANGE...
GRAPH
CLIMATE DATA
VOTING INTENTIONS SURVEY
OPINION POLL
THE SCIENTISTS
THE POLITICIANS
19/02 2007-098 © John Ditchburn

The Economist

Adapt or Die

Sep 2008

Environmentalists have long said the world should concentrate on preventing climate change, not adapting to it. That is changing

Adaptation definitions

The adjustment in natural or human systems in response to actual or expected climatic stimuli or their effects, which moderates harm or exploits beneficial opportunities – IPCC

A process by which strategies to moderate, cope with and take advantage of the consequences of climatic events are enhanced, developed, and implemented -UNDP

The process or outcome of a process that leads to a reduction in harm or risk of harm, or realisation of benefits associated with climate variability and climate change - UKCIP

Actions taken to help communities and ecosystems cope with changing climate condition (UNFCCC)

Making smart decisions - Keenan

Role of government

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Considerable debate

Some argue (Garnaut 2009, Productivity Commission 2012)

- Limited need for public investment beyond provision and dissemination of information on possible consequences and advice on appropriate actions.
- Government needs to provide a diverse and resilient economy and well-functioning markets for risk management tools, such as insurance.

Others (Hallegatte et al. 2011) suggest

- adaptation requires incentives, standards and regulations that promote appropriate individual and community actions to climate risks
- building standards, land zoning rules , institutional changes
- national strategic assessments
- increased emergency preparedness and responses
- assistance to help the private sector manage large-scale catastrophes,
- improved public investment decisions in relation to public infrastructure
- provision of public goods provided or regulated by governments, such as roads and natural or cultural heritage areas

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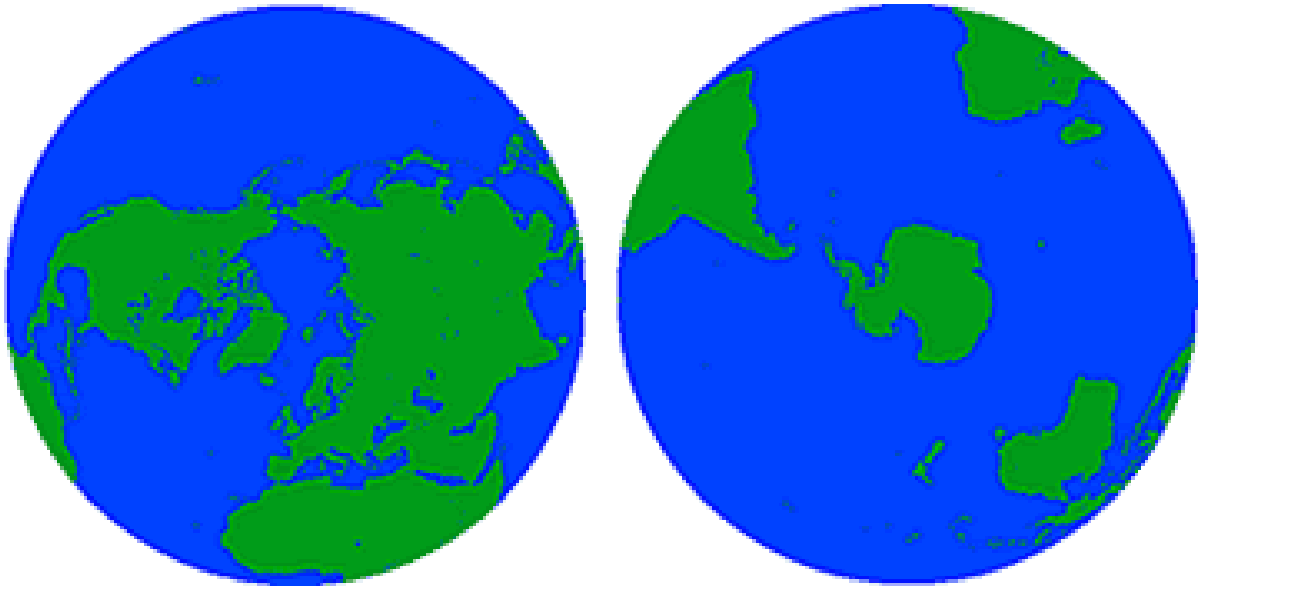
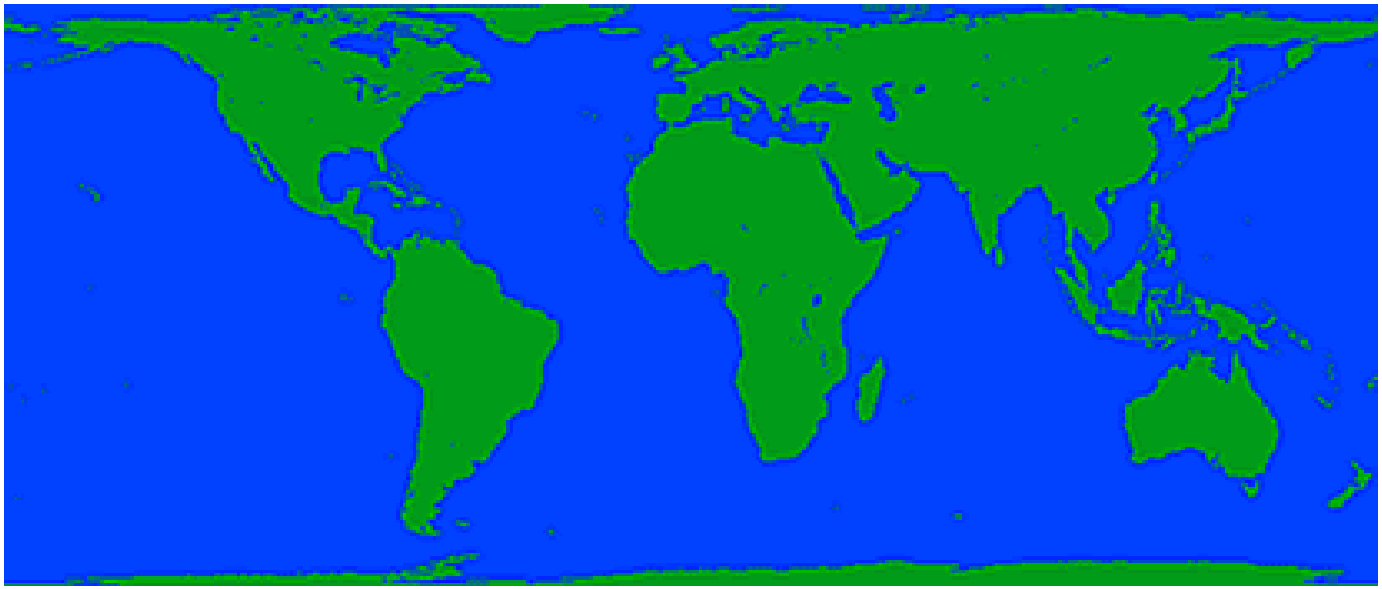
North vs South





The Southern Hemisphere is a challenging place for climate scientists. Its vast oceans, Antarctic ice, and deserts make it particularly difficult to collect information about present climate and, even more so, about past climate.

However, multi-centennial reconstructions of past climate from so-called proxy archives such as tree-rings, lake sediments, corals, and ice-cores are required to understand the mechanisms of the climate system.

Until now, these long-term estimates were almost entirely based on data from the Northern Hemisphere

(Science Daily 2014)

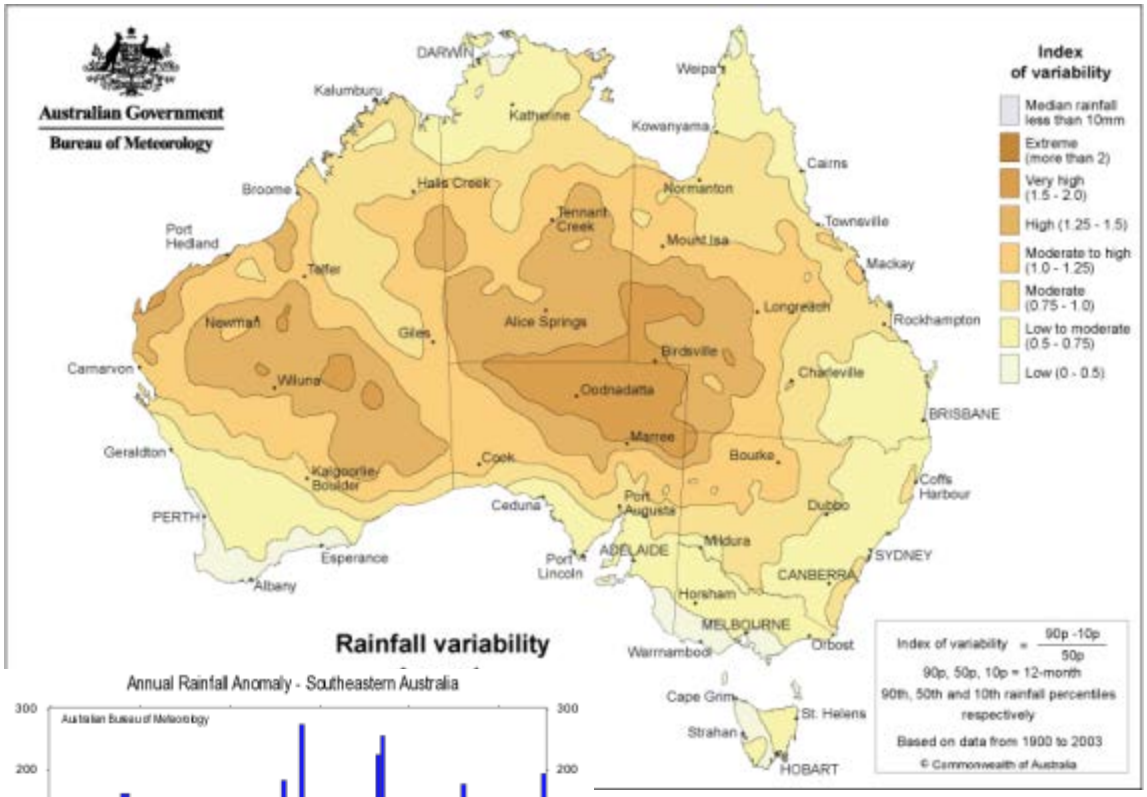
The Northern Hemisphere is responsible for the ice ages and all things bad. The Southern Hemisphere is the moderator and provider of all things good (Peter Lang 2014)

The Australian Environment

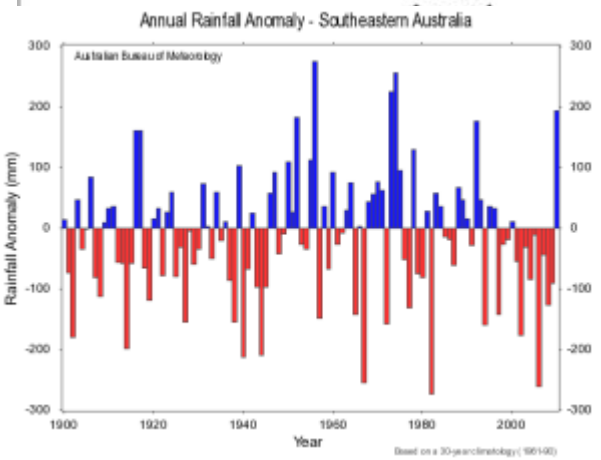
I love a sunburnt country,
A land of sweeping plains,
Of ragged mountain ranges,
Of droughts and flooding rains

Dorothea MacKellar 1904

- Climate hot, dry, variable
- Generally flat, soils old and weathered
- Plant production is water and nutrient limited
- Fire a significant force
- Plant reproduction and growth opportunistic, disturbance adapted
- Long history of indigenous occupation
- 220 years of European settlement
- 23 million people, 90% urban
- GDP US$40K per capita

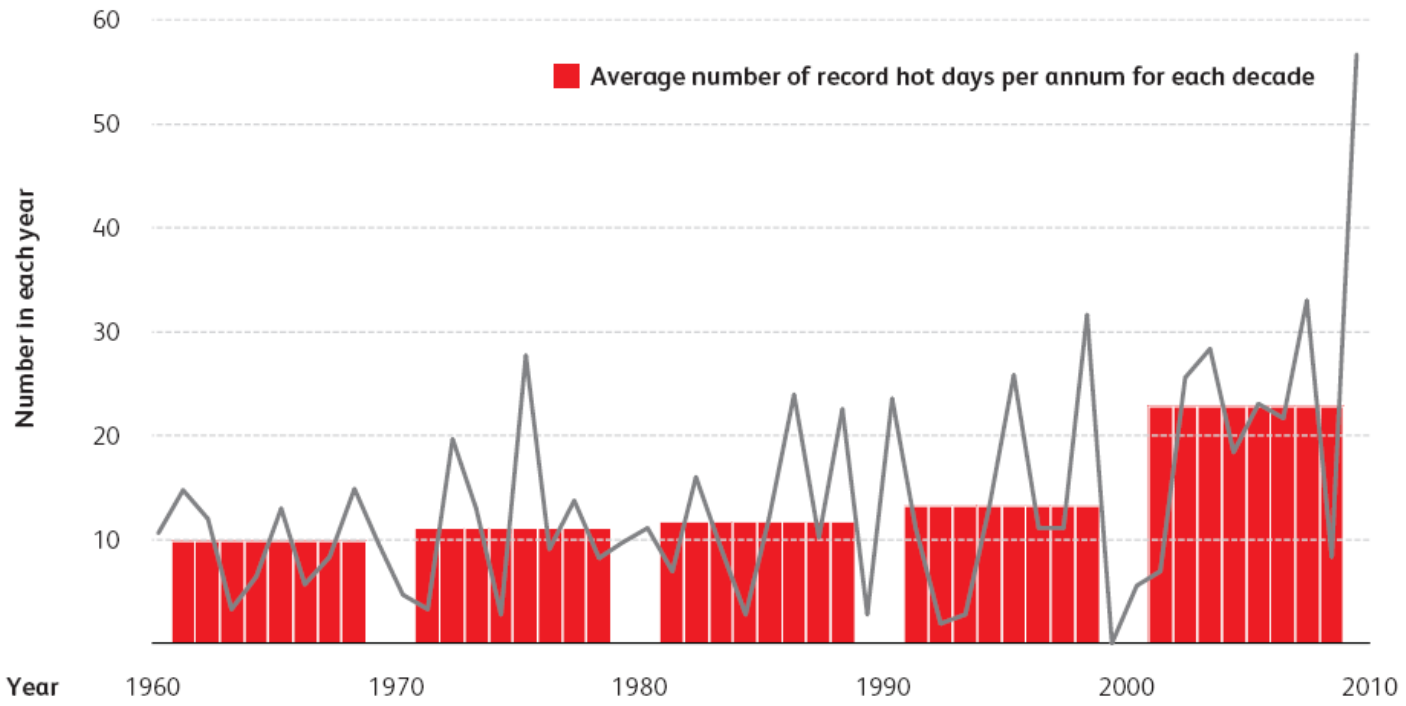


Rainfall variability

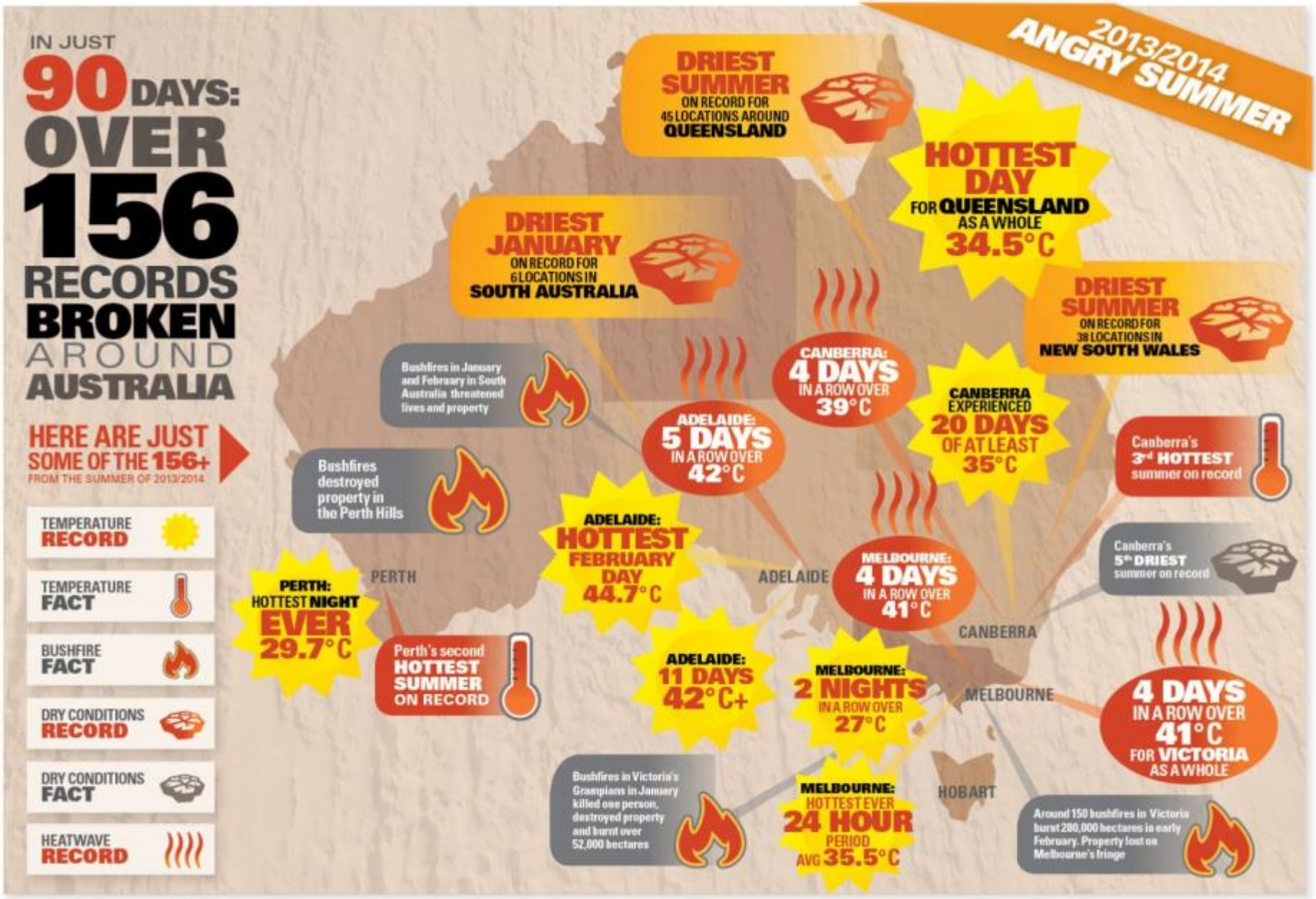


Increased hot days

Number of record hot day maximums at Australian climate reference stations



Source: Bureau of Meteorology



Source: BoM 2014a–h; The Age 18 January 2014; The Age 11 February 2014

www.climatecouncil.org.au

Projected climate change

1 projected increases in average temperatures in Australia
compared with 1990

	2030 °C	2050 °C	2070 °C
Australia	1.0	0.8 – 2.8	1.0 – 5.0
coastal	0.7 – 0.9		
inland	1.0 – 1.2		

Source: CSIRO and BoM (2007).

2 projected future changes in precipitation in Australia
compared with 1990

	2030 %	2050 %	2070 %
annual			
northern areas (and central and eastern for 2050 and 2070)	-10 to +5	-20 to +10	-30 to +20
southern areas	-10 to 0	-20 to 0	-30 to +5
winter and spring			
south east	-10 to 0	-20 to 0	-35 to 0
south west	-15 to 0	-30 to 0	-40 to 0
eastern areas	-15 to +5	-20 to +10	-40 to +15
summer and autumn	-15 to +10	-20 to +15	-40 to +30

Source: CSIRO and BoM (2007).

Victoria

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5.8 million people
Rapid growth (2%/yr)
Urbanised, aging popn
US$53,000 per capita GSP
Economy

- Financial, health and professional services
- Manufacturing
- Education
- Construction

Major exports

- Agricultural products
- Education services
- Motor vehicles (for now)

High GHG emissions/capita

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Climate impacts

Responses

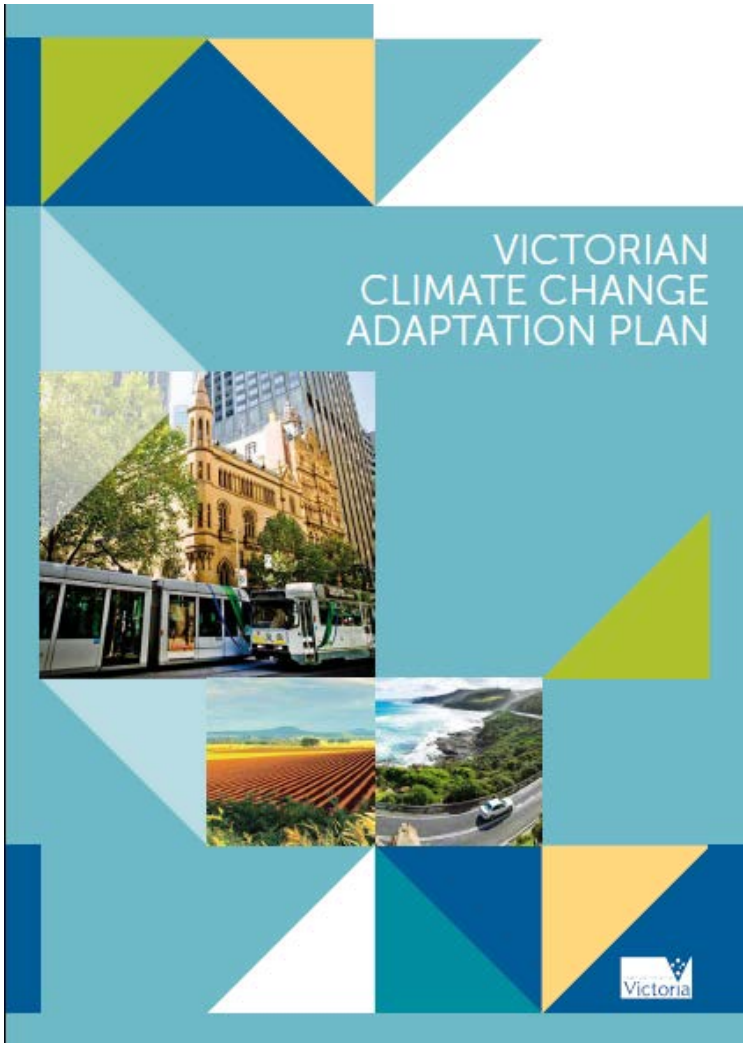
Water
- Consumption reduction
- Desalination plant – controversial!
- Recycling, recovery and reuse in urban catchments
- Water sensitive urban design

Transport infrastructure
- Track upgrade and hardening
- Upgraded carriage air conditioning

Heatwave
- Improved warning systems
- Communication network

Emergency services
- New governance and control arrangements
- Greater response capacity
- More integration across fire and emergency services
- Focus on community resilience

Current adaptation policy context



The Department of Treasury and Finance has estimated that the Victorian Government has spent over $4 billion over the past 10 years on response and recovery to climate-related events such as bushfire, flood and drought.

Victorian research[6] has estimated that by 2050 increases in bushfires under projected future climate change will cost the agriculture sector an additional $1.4 billion ($46.6 million per year by 2050) and the timber industry $2.8 billion ($93.4 million per year by 2050).[7]

Informed decision-making requires research tailored to Victorian settings and needs

The Centre

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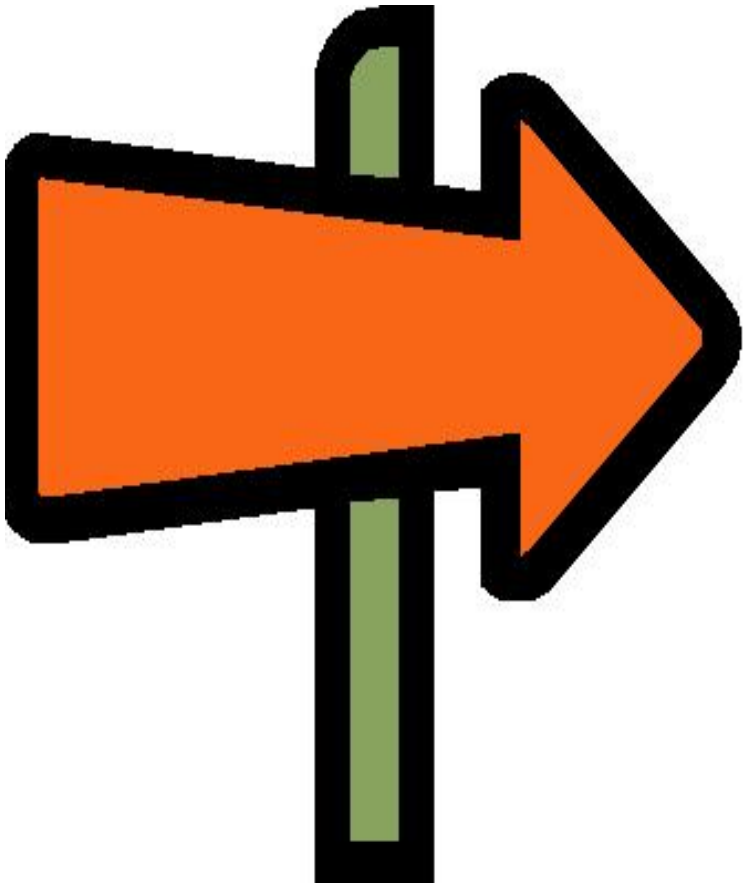

- A$5M over 5 years from 2009
- Multi-university partnership

Objectives

- Provide multi-disciplinary, research, analysis and advice to Government, industry and the community
- Increase decision-making capacity on climate adaptation
- Include adaptation needs into strategic planning
- Build partnerships between Victorian universities
- Expand funding for adaptation research

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Centre operation

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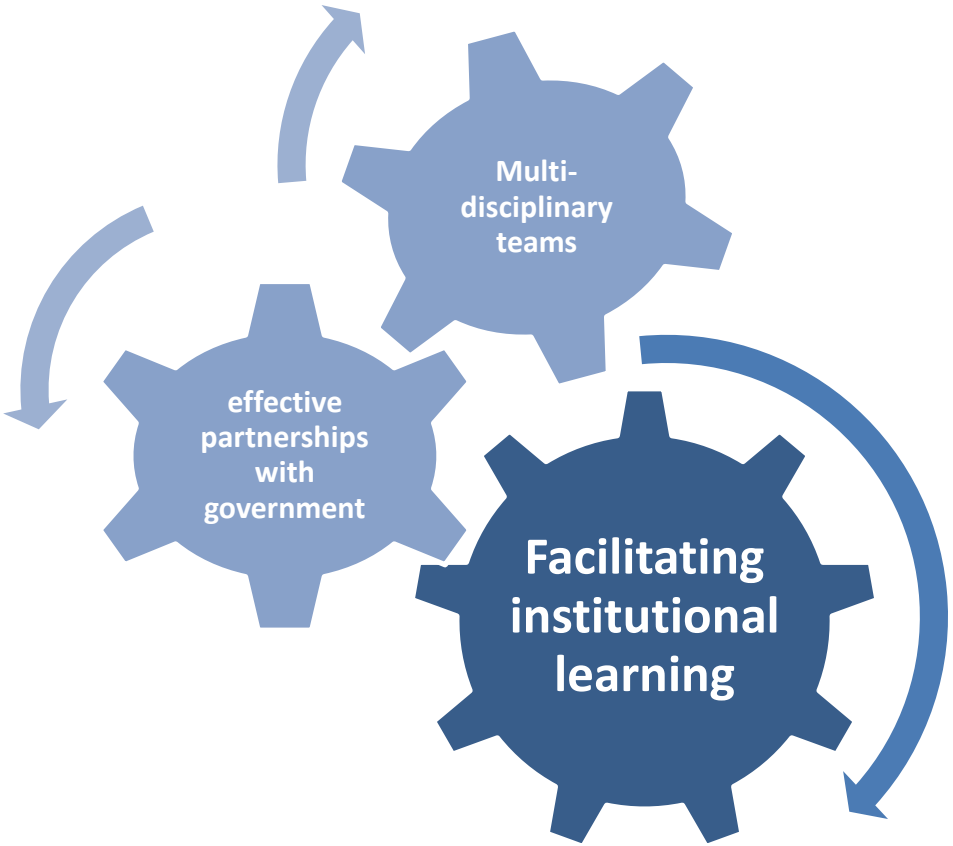

Priorities
- Developed by Government

Projects
- Researchers and government teams

Outputs
- Policy briefs
- Reports
- Presentations

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Research program

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Policy, governance and implementation

- Framing adaptation for policy and practice
- Legal and regulatory arrangements for adaptation
- Implementing adaptation tools and practices
- Co-producing knowledge in research and policy

Decisions under uncertainty

- Scenarios in climate adaptation policy and practice
- Real options in water resource planning
- Decision taking under uncertainty – the sociology of adaptation decisions

Urban resilience

- Contribution to resilience of distributed systems for water and energy generation
- Planning urban green infrastructure to reduce urban heat impacts
- Design led approaches to spatial planning

Natural resource management

- Integrated land management in a changing climate
- Incorporating traditional knowledge in floodplain management
- Southern Slopes Climate Adaptation Research Partnership (with UTAS)
- Comprehensive Carbon Assessment Project

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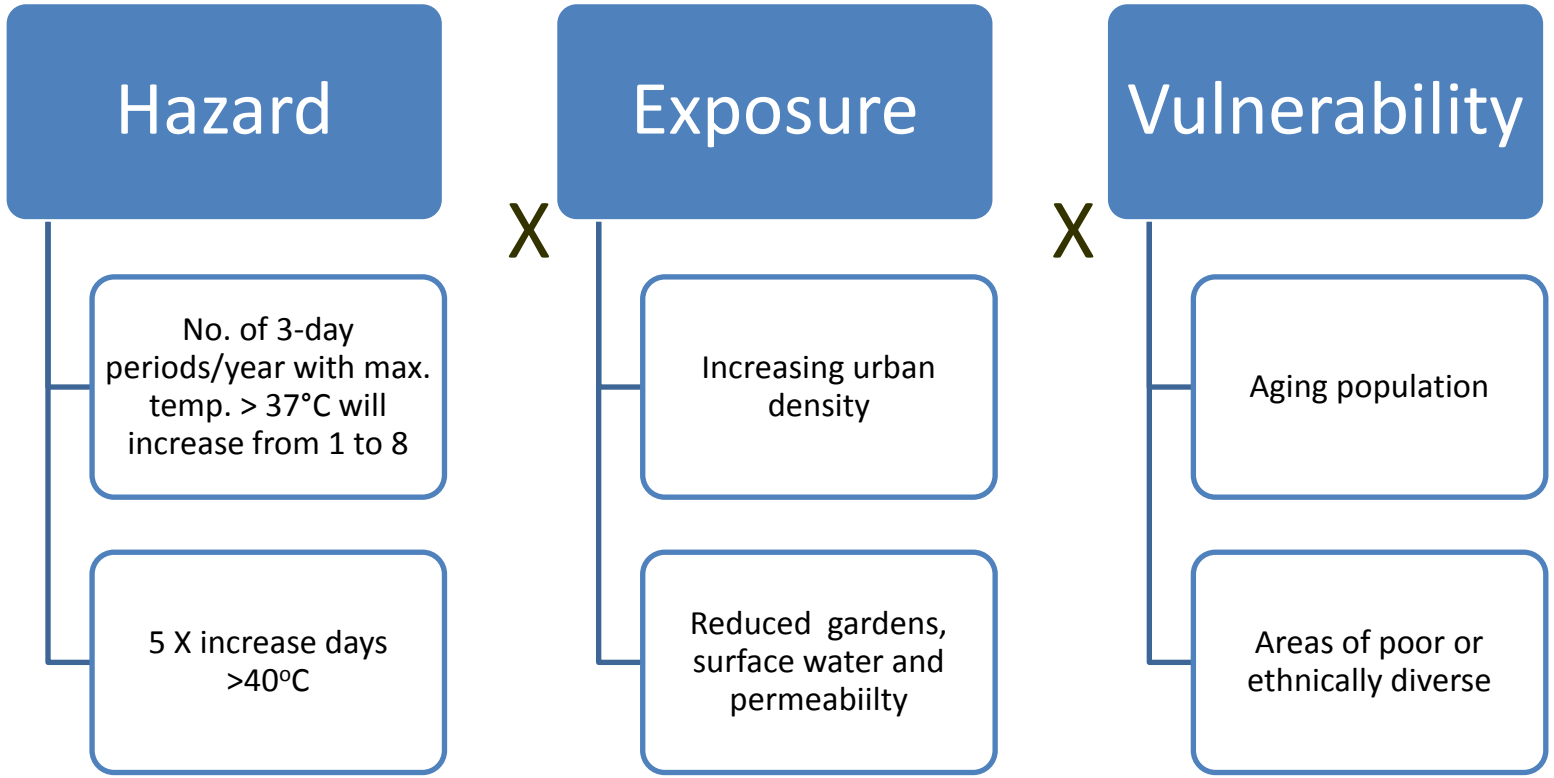
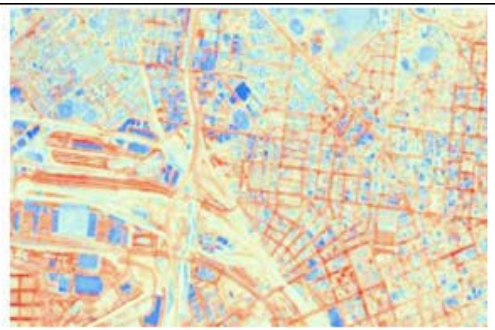
Urban Heat

- Risk =
- 

A 10% increase in green infrastructure could result in a reduction of up to 2.5°C


Urban agriculture


Green walls




Urban woodlands


Street treatments


City street trees


Green roofs


Vegetated urban design

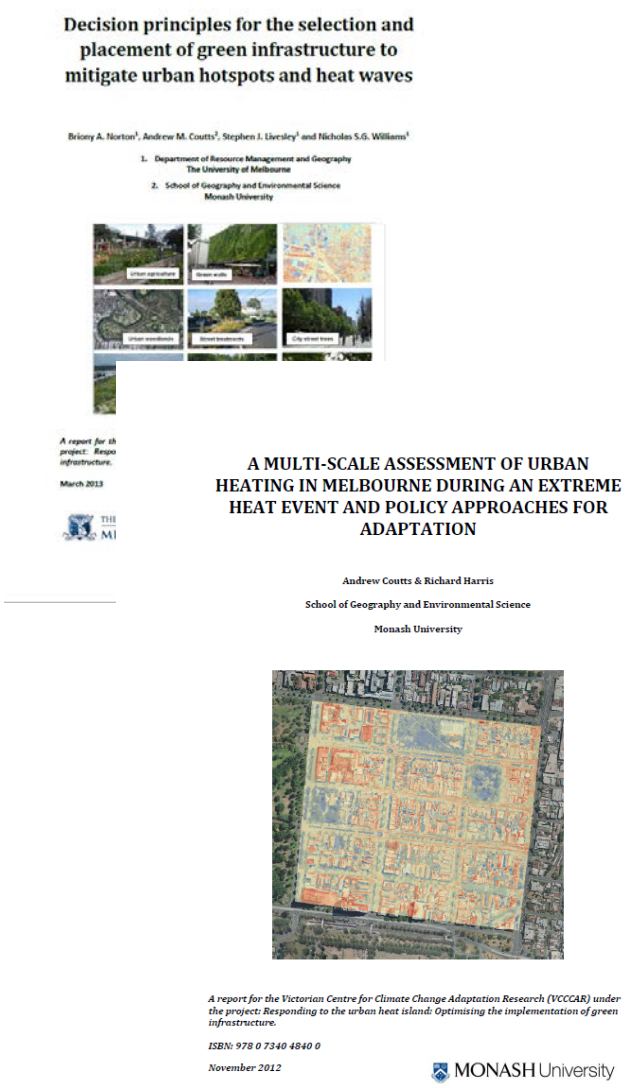

Parks, gardens & golf courses

Urban heat assessment

- Thermal mapping is an excellent tool for communicating the influence of urban design on urban climate
- Used to assessed the influence of green infrastructure on land surface temperatures

Figure 2 | Scales of Melbourne's thermal footprint (adapted from Loughnan et al., 2013; City of Melbourne, 2012)

Perceptions
Multi-agency policy response



Health

- Educate children through preventative health programs,
- GI master plans for vulnerable urban ‘hotspots’
- Promotion of co-benefits (air quality and active transport options)

Transport

- Reduce regulatory barriers around street trees and setback requirements

Planning

- Incentivise maintenance or installation of GI at a site level

Local government

- Identify priority neighbourhoods and streets
- Improve the health and resilience of existing green infrastructure by integrating water sensitive urban design
- Select appropriate green infrastructure elements

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Adaptation Navigator

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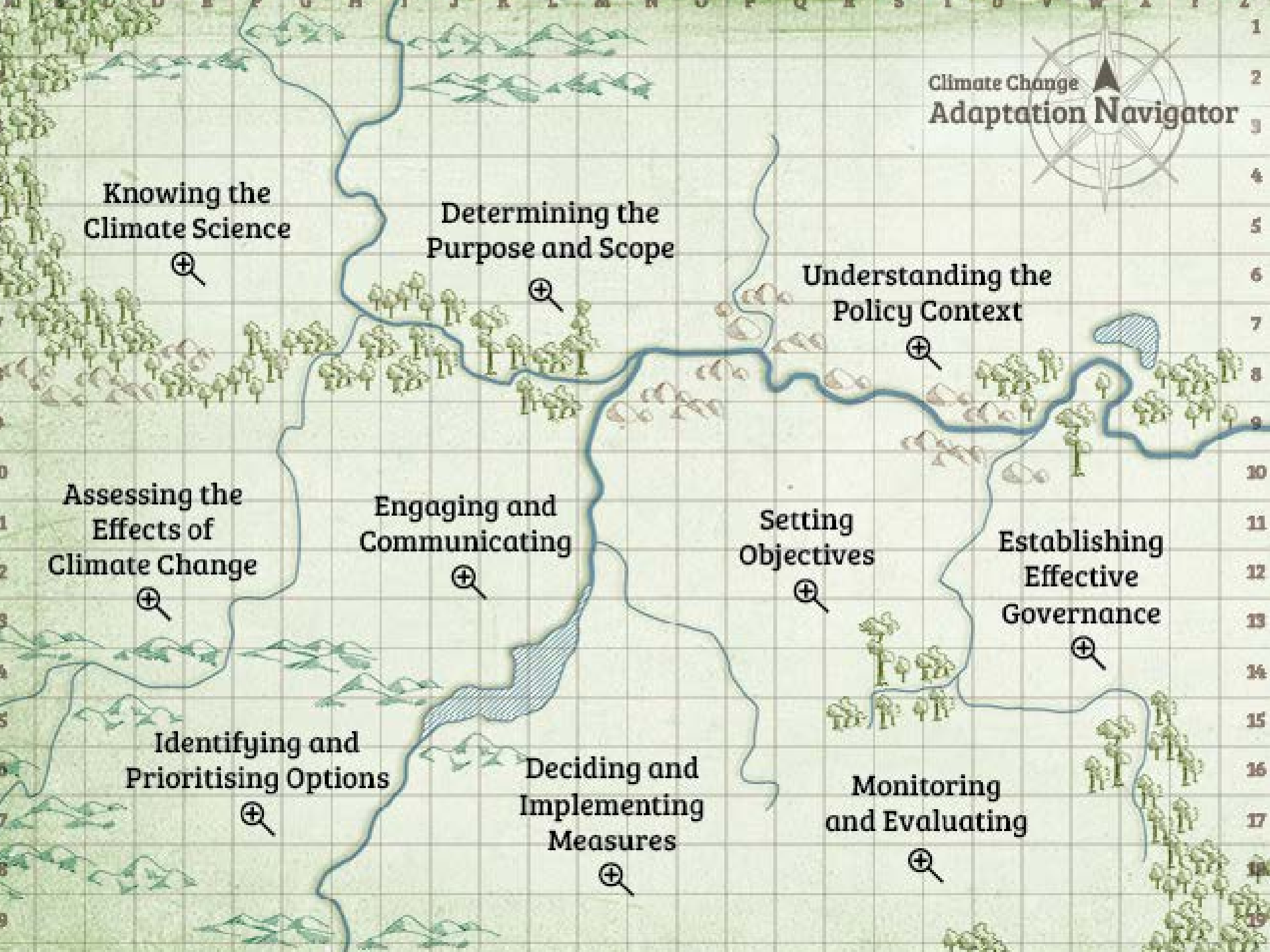
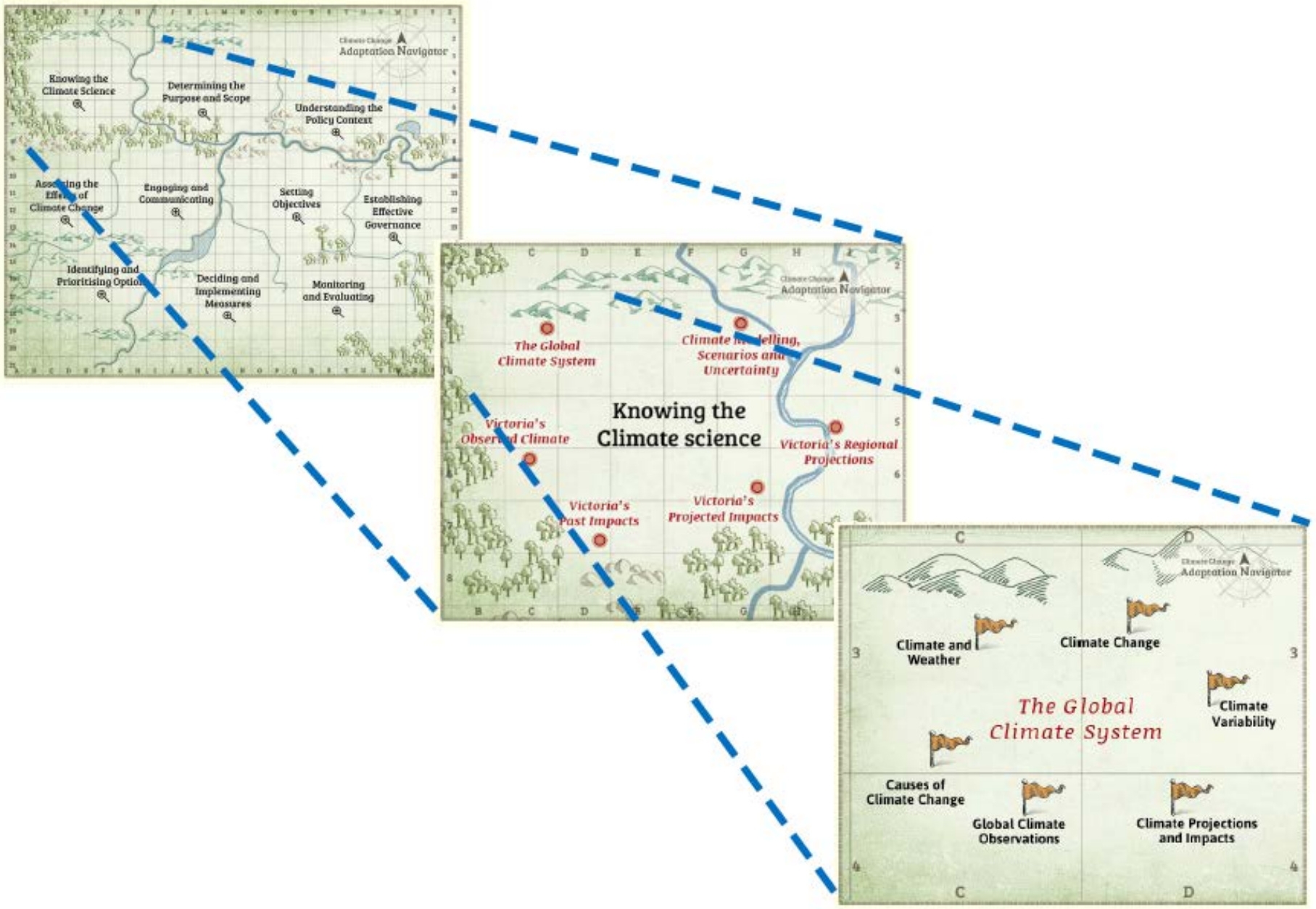

Climate Change
Adaptation Navigator
Knowing the Climate Science
Determining the Purpose and Scope
Understanding the Policy Context
Assessing the Effects of Climate Change
Engaging and Communicating
Setting Objectives
Establishing Effective Governance
Identifying and Prioritising Options
Deciding and Implementing Measures
Monitoring and Evaluating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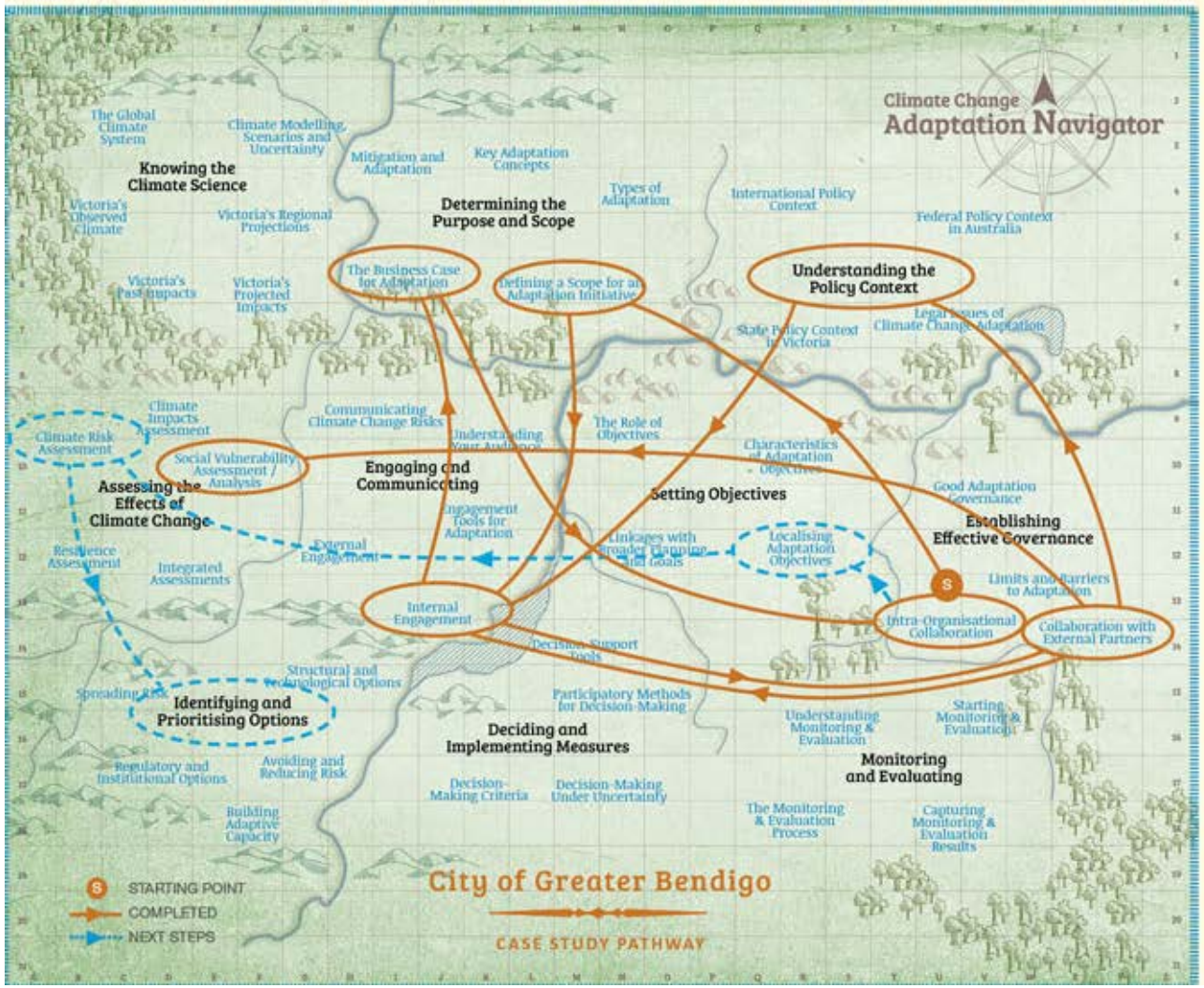
Monitoring and Evaluating
The Global Climate System
Climate Modelling, Scenarios and Uncertainty
Knowing the Climate science
Victoria's Observed Climate
Victoria's Regional Projections
Victoria's Past Impacts
Victoria's Projected Impacts
Climate and Weather
Climate Change
Climate Variability
The Global Climate System
Causes of Climate Change
Global Climate Observations
Climate Projections and Impacts

Adaptation planning pathways



Case Study: City of Greater Bendigo

The City of Greater Bendigo is the local government of a major regional centre servicing the towns and rural areas of the Loddon region, about 150 kms north west of Melbourne. While stil significant, traditional reliance on manufacturing has diminished in recent years, with the development of a strong health, education and retail sector in the city. Commerce, finance and government administration are also important activities.

The map on the left shows the adaptation pathwa for the City of Greater Bendigo (June 2012).

Click on the link below to access the full climate change adpatation pathway profile for Bendigo.

- City of Greater Bendigo Climate Change Adaptation Pathway

As part of the VCCCAR Framing Adaptation project focus groups, workshops and key informant interviews were held with three local governments in Victoria; the City of Greater Bendigo, the City of Melbourne and the City of Greater Geelong. The

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March 2014
Climate Change Adaptation Planning for Decision-Makers

Adaptation Planning for Community Service Organisations and Primary Care Partnerships
Policy Guidance for State Government

Policy Brief: Part I

Contributors
Hartmut Fünfgeld, Karyn Bosomworth, Sophie Millin, Phillip Wallis and Alianne Rance

Needs →

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Implementing adaptation

- Localised, accessible information on impacts (Climate Change Act 2010)
- Testing and refining of this project's practical adaptation planning guidance
- A sector-wide capacity building program
- State government advocacy regarding adaptation planning
- Clarification of roles and responsibilities between governments, and between government and the sector
- Support for relevant organisations to undertake, implement, monitor and maintain adaptation plans and their adaptive capacity

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grampians pyrenees primary care partnership pcp

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- Used the adaptation navigator as a planning tool
- Produced an adaptation handbook for their partner agencies - in their own words
- Produced regionally specific information and resources that can assist their members
- Outlined a business case for adaptation, knowing the climate science, assessing the effects of climate change and understanding the policy context.

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Learnings and challenges

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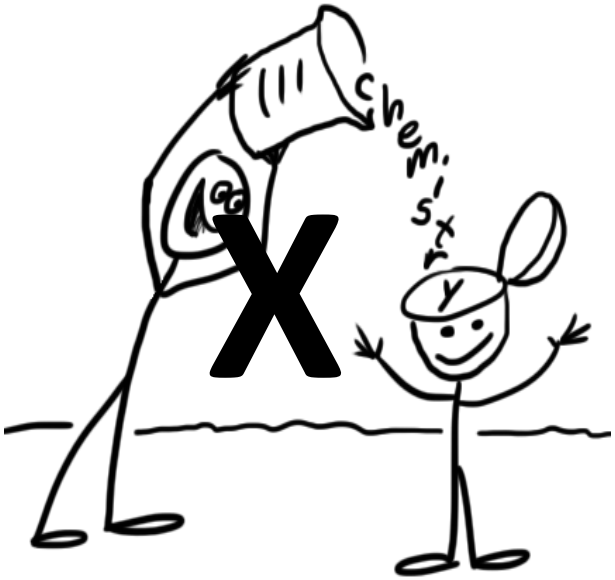

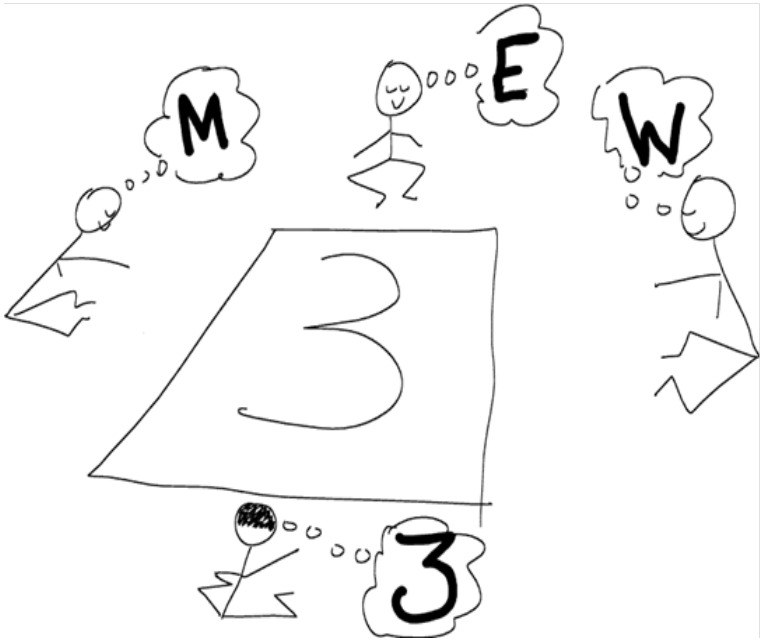

Image source: John Rowley http://ch301.cm.utexas.edu/learn/

Learnings

Researchers working in teams across institutions and in partnership with state and local government can support better policy and decision making

Research is supporting improved practice, through local government and NRM organisations

Strong demand for knowledge exchange and support in implementing tools

Working at the research-policy interface requires particular skills and interests – not for everyone

The policy process

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VS

- Chaotic and unpredictable
- Rules are unclear and decisions arbitrary
- Not apparent who is calling the shots and who to influence
- Risks for those who are not well-prepared and supported
- Timing is critical

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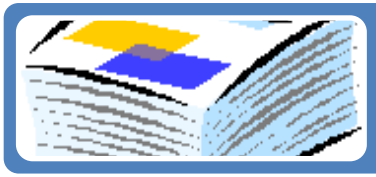
Challenges

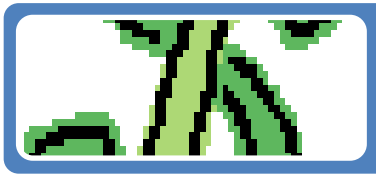
Presenting research outputs to meet policy needs and time frames

Leadership, innovation culture and willingness to experiment in government

Maintaining activity in a changing political environment



Integration and coordination between different levels of government and with other research organisations



Maintaining funding!!







FOUR POINTS
BY SHERATON







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