BUILDING CLIMATE-RESILIENT BUSINESSES PROJECT

Business sector climate risk assessment support: desktop literature review

December 2022

SECCCA
South East Councils
Climate Change Alliance

Contents

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SUPPORTED BY

MELBOURNE'S
CLIMATE
JOURNEY

CREATED BY

SCIENCE INTO
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The Greater Melbourne Regional Climate Change Adaptation Strategy is a community-led project supporting Greater Melbourne communities to adapt to a changing climate. It is supported by the Department of Environment, Land, Water and Planning (DELWP) and funded through the Supporting Our Regions to Adapt program.

AUDIENCE: This document is aimed at the end-user (i.e., the small business owner interested in adapting their business to climate change).

Cover photo: Dale Rogers – Photo Rangers and Bass Coast Shire Council

Desktop literature review

SUMMARY

This desktop literature review intends to provide users of the small business climate adaptation toolkit with information, and links to other resources, to delve more deeply into the background to the toolkit, adaptation options, and climate change.

The links represent a filtered view of what is likely to be most helpful to small-business owners wanting to (a) understand more about the impacts of climate change and why being ready is important and (b) how to plan to adapt to climate change.

This literature review is by no means exhaustive and just touches on the many resources useful to a business owner.
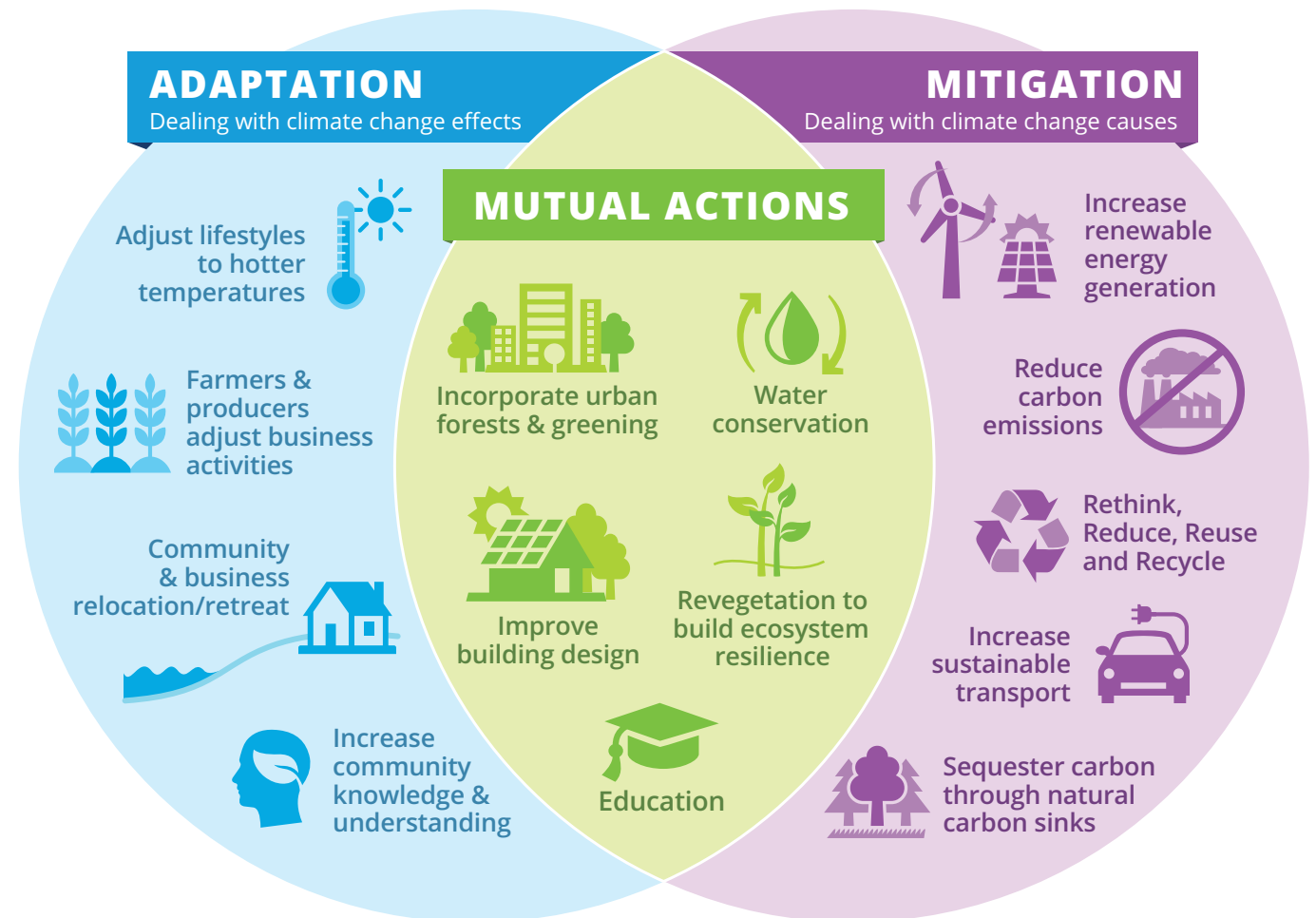
THE FOUR AREAS COVERED HERE ARE:

1 The case for businesses to prepare for the local to global impacts of climate change

2 Information on where to find out more about climate change impacts

3 Adaptation action planning tools for general use

4 Adaptation action planning tools for small businesses

BUSINESSES NEED TO PREPARE FOR THE IMPACTS OF CLIMATE CHANGE

Businesses need to prepare for the future impacts of climate change. There are global calls for businesses to take action on climate change, such as the United Nations (UN) Climate Change Secretariat resource about the **various approaches for long-term adaptation**, and the UN Development Program resource about **enabling small businesses to adapt**. There are also local calls for action, such as the **Port Phillip Council Sustainable Business Network**. Many of these calls for action have in-depth information and tools for climate mitigation (i.e., reducing emissions) but less information on climate adaptation.

Both mitigation and adaptation are important for businesses to understand and do. The Gippsland Regional Climate Change Adaptation Strategy (released in 2021) has a useful diagram of the differences and overlap between mitigation and adaptation activities (Figure 1). In short, mitigation deals with the causes of climate change, whereas adaptation deals with the impacts. Some actions will deal with both.

ADAPTATION
Dealing with climate change effects

MITIGATION
Dealing with climate change causes

MUTUAL ACTIONS

Adjust lifestyles to hotter temperatures

Farmers & producers adjust business activities

Community & business relocation/retreat

Increase community knowledge & understanding

Incorporate urban forests & greening

Water conservation

Improve building design

Revegetation to build ecosystem resilience

Education

Increase renewable energy generation

Reduce carbon emissions

Rethink, Reduce, Reuse and Recycle

Increase sustainable transport

Sequester carbon through natural carbon sinks

Figure 1: Examples of actions that address climate change mitigation, adaptation, or both. From p.5: **Gippsland Regional Adaptation Action plan**.

The World Economic Forum has information and strategic tools for businesses, especially relating to climate mitigation (and other business risks) and building the case for action on climate change. For example, they have a **powerful foresight tool** about risks to businesses. They also have publications about understanding if your business has **a risk from climate change, and pricing climate risk**. These publications may interest businesses with global links or supply chains. However, they are bigger picture than most small businesses would need and more focused on climate mitigation.

The **US EPA** and **Global Center for Adaptation** have clear and detailed information for acting on climate change. Again, they focus more on climate mitigation than adaptation but provide good frameworks for businesses to act on climate change.

Climate KIC is a large and successful **European program** (with an **Australian offshoot**) designed to promote business responses to climate change. Both have specific targeted programs to promote innovation in climate resilience and adaptation that operate mainly at the sectoral level (e.g. finance sector). There also are opportunities for businesses wanting to do more by engaging with Climate KIC.

The National Climate Change Adaptation Research Facility (NCCARF) created many resources at the national level. **Various publications** are available, as highlighted later in this literature review.

The Australian Government released **a national climate resilience and adaptation strategy in 2021** with three objectives to drive adaptation across Australia:
- drive investment and action through collaboration
- improve climate information and services
- assess progress and improve over time.

The strategy has plenty of useful, national-scale information (e.g. see Figure 2) and approaches. It takes a capability-building approach to prepare Australia to adapt to climate change. The resilience and adaptation strategy highlights the need to adapt to climate change from a business perspective and contains examples. It highlights that adaptation to climate change is needed to reduce or avoid economic costs:

" To take just one sector as an example, higher temperatures and changes in seasonal rainfall patterns are affecting the profitability of Australian farms. Analysis by the Australian Bureau of Agricultural and Resource Economics and Sciences (ABARES) found changes in seasonal conditions have reduced annual average farm profits by 23% or around $29,200 per farm over the past 20 years, with larger reductions projected to 2050 in the absence of adaptation.

National climate resilience and adaptation strategy, p.10.

The professional body responsible for certifying practising accountants in Australia (CPA Australia) has six helpful tips for how businesses can build an environmental strategy (which includes adapting to climate change). The tips provide a simple, over-arching business framework for planning for, and adapting to, climate change.

1. identify your exposures

2. define your goals

3. establish metrics

4. measure your performance

5. take action based on the results

6. bring your customers along with you.

Directors of companies are made actively aware of their responsibilities by bodies such as the Australian Institute of Company Directors (AICD). The AICD also makes directors aware of climate change and how it affects governance, and resources for managing it.

At an international level, the Taskforce on climate-related financial disclosures (TCFD) has useful information about responsibilities and possible actions regarding climate-related risk disclosures.

From a local government perspective, there is information for Councillors about their roles and responsibilities in acting on climate change designed for use in Victoria.

The recent Ironbark/ICELI climate review has useful data and information about the case for change in businesses and local areas, but focuses on mitigation.
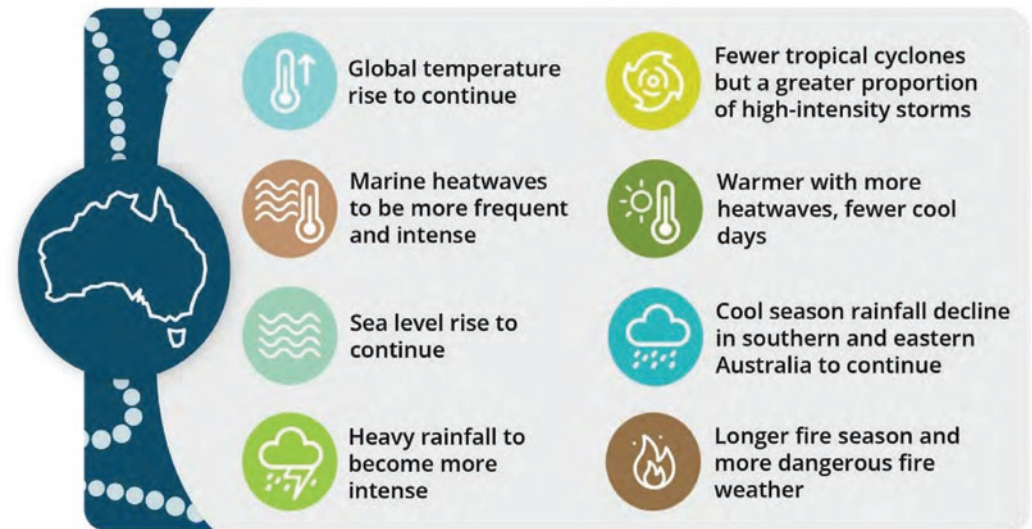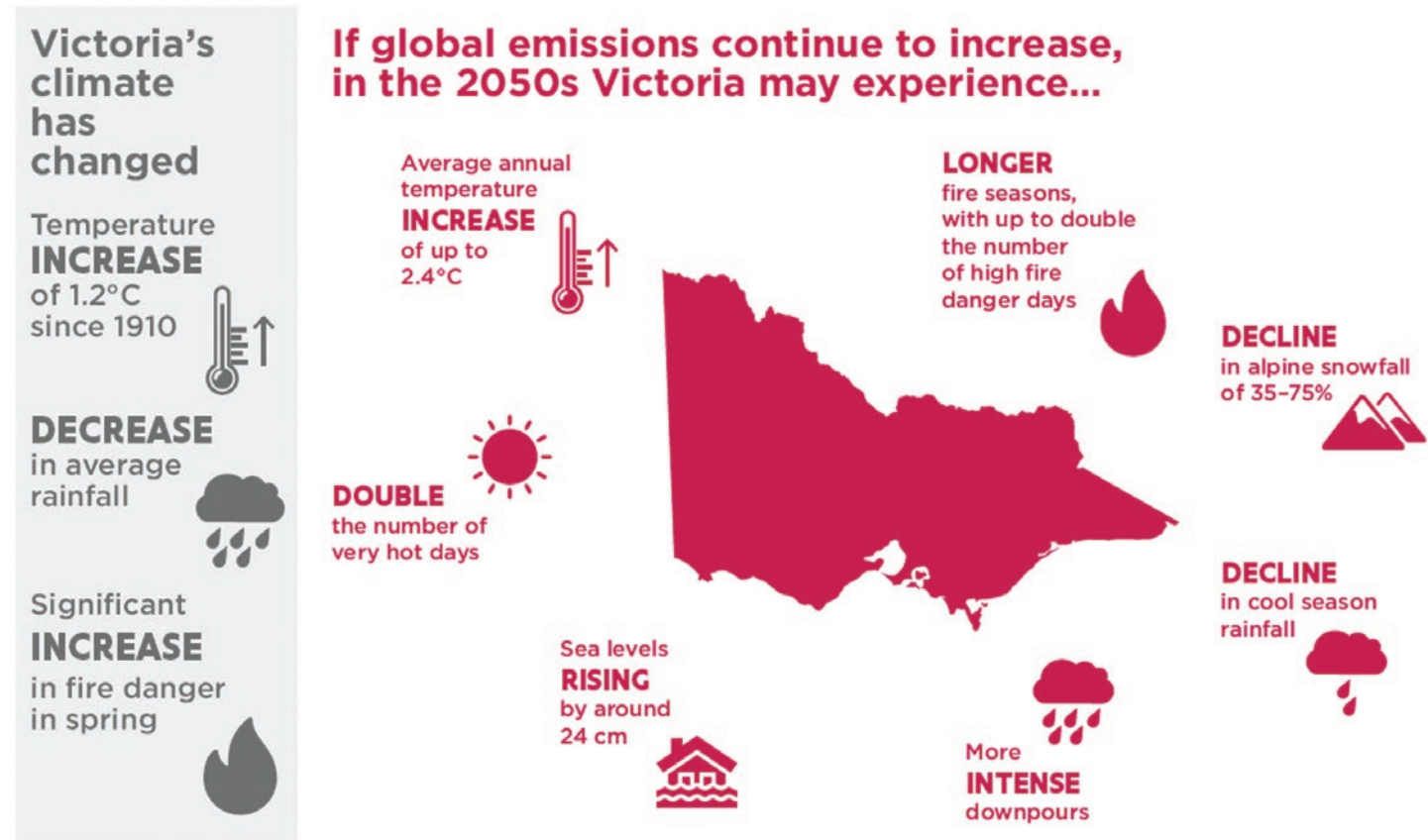

Figure 2: Predicted changes to the Australian climate.

Source: Bureau of Meteorology and CSIRO.
From p.9: National climate resilience and adaptation strategy.

INFORMATION ABOUT CLIMATE CHANGE IMPACTS IS HIGHLY ACCESSIBLE

This section highlights some of the vast amounts of information available about the impacts of climate change at a national, state, regional and local level in Australia (note: we do not warrant the accuracy or relevance of any of the following publications).

The State Government of Victoria provides several useful publications with varying levels of detail and complexity (see the links at Victoria's changing climate). See Figure 3 for the site's useful high-level summary of the changes expected to Victoria's climate.

Climate change projections use different scenarios based on likely changes to global emissions. They provide information about future climate impacts, such as floods, fire and heatwaves. It can be complex (and even confusing) to understand what the projections might mean for a given location. For a short (3-page) plain-English summary of the basics of climate change in Victoria, please read Appendix 1 (pp 48-50) of the SECCCA Climate Vulnerability Guide. This easy-to-

Victoria's climate has changed

Temperature **INCREASE** of 1.2°C since 1910

DECREASE in average rainfall

Significant **INCREASE** in fire danger in spring

If global emissions continue to increase, in the 2050s Victoria may experience...

Average annual temperature **INCREASE** of up to 2.4°C

DOUBLE the number of very hot days

Sea levels **RISING** by around 24 cm

LONGER fire seasons, with up to double the number of high fire danger days

DECLINE in alpine snowfall of 35–75%

DECLINE in cool season rainfall

More **INTENSE** downpours

Figure 3: Victoria's changing climate, under a high emissions scenario compared with 1986–2005 (updated from Victoria's Climate Science Report, from Victoria's changing climate).

read summary – while aimed at councils wanting to plan adaptation of council assets – is a generally applicable primer for businesses.

For those wanting access to more information about climate change impacts, the Victorian Climate Projections 2019 website provides the official government projections. There is a document to help decide what climate projections data to use. The site requires some time to understand how to use the information effectively.

There is a detailed online tool for those wanting more data and information about Victoria's future climate. It is complex to use for a non-technical expert but very comprehensive.

There are shorter summaries for the most likely impacts in different regions around Victoria. The SECCCA region sits (mostly) in the Greater Melbourne region. There is a helpful eight-page summary of climate impacts on this region. It explains in plain English the scenarios, the different emissions projections and the likely climate impacts in the Greater Melbourne area. As well as Melbourne, nine other regional climate impacts summary documents are available.

The Victoria Managed Insurance Authority (VMIA), the insurer and risk advisor for the Victorian Government, makes its climate risk advisory tools publicly available. The VMIA has broad climate risk management tools available, as well as tools to help address climate risks and guides for using risk assessment approaches to plan for and manage climate risk. While many of these tools are written for people with basic skills in planning and managing risk, they are helpful for people wanting more detailed tools for climate risk planning.

The Climate Council has created a helpful online tool to understand planning risk – the climate risk map of Australia. The tool allows people to enter a postcode and look at different emissions scenarios locally across five impacts: three types of flooding (surface water, rivers and coastal), bushfires and wind. The free map uses information from the Climate Valuation tool, for which an individual or business can pay a fee to obtain more targeted information about their location, and possible suggested solutions (i.e. adaptation actions). The free version is enough for the needs of a small business in the SECCCA region.

The CSIRO has a series of climate impact tools. Most are available to view at a basic level, however none of the more detailed tools is publicly available for businesses. Of the free CSIRO offerings, there is a useful tool for modelling different climate future protections. The most useful is the climate analogues tool, which allows you to see which location in Australia today has a similar climate to what yours will be like in the future. It gives you a sense of what your future climate will be like by seeing what it is like in a place with a similar climate now – for example, it shows that Melbourne's climate in 2090 will be like Dubbo's today. In the climate explorer view, you can pick your location to check which town (in current climate terms) your climate will be similar to in 2030, 2050 and 2090.

CSIRO has powerful tools available for use under partnerships and fee-based arrangements. For example, INDRA is a model that quickly processes large amounts of geospatial data. It can be used to stress test planning decisions, analyse local scenarios, and understand local risk hot spots, given future changes in climate and related hazard conditions. Similarly, the Natural Hazards and Infrastructure Initiative of CSIRO does specialised modelling and analysis of natural hazards and associated infrastructure-related problems. However, neither of these tools is publicly available for businesses.

MANY ADAPTATION ACTION TOOLS ARE AVAILABLE FOR GENERAL USE

Many general tools and frameworks can be used to advise businesses on what to do when planning to adapt to climate change. This section highlights some broadly available approaches, lessons learned from adaptation action planning, links for more information, and discusses some standard adaptation planning tools for businesses.

NCCARF has a broad range of information, including reports on **how to build a business case for climate adaptation**, information on **managing climate risk to food security** and reports on **specific adaptation planning pathways for transport infrastructure on the coast**. NCCARF also completed a **climate change adaptation strategy and action plan with the City of Melbourne** – it is insightful to consider how participants rated the risks of future climate impacts compared with now (see Table 1).

The CSIRO's **climate resilient enterprises** initiative aims to '… prepare and assist Australian industry to manage impacts and risks from a changing climate,

whilst identifying adaptation and transition options to inform their climate actions and investments.' The initiative provides science-based climate intelligence tailored to specific industry needs. It focuses on (1) providing credible intelligence and technical support on physical and transitional climate risk to industry; (2) equipping industry to manage climate risk and uncertainty while identifying adaptation options and investment opportunities; and (3) supporting the building of a sustainable, climate-resilient economy in Australia. This initiative is likely to be a helpful resource for bigger businesses, or sectors, to draw from, but it is not free.

Climate Works, the Monash University initiative for translating research, provides climate resilience and adaptation frameworks. It also has business-relevant **publications** and **events**. It is mainly focused on climate mitigation or adaptation at the sectoral level (especially the water sector).

Victoria has seven adaptation action plans, released in late 2021,

The City of Melbourne risks identified and assessed

Risk title and rating	Now	2030	2070
Mass stranding of people due to public transport stoppages, as a result of flooding or storm damage	8	9	9
Adverse health outcomes due to emergency services being hindered by storm and flood impacts, such as flooded roads, traffic delays and other blockages.	8	8	8
Increased potential for injuries or deaths occurring as a result of flash flooding.	7	9	10
Increased reparation costs following intense rainfall and wind events, including damaged buildings, damaged or collapsed roads, damage to river banks and associated infrastructure, general clean-up.	7	8	9
Business closure and job loss due to business interruption from storm damage and flooding.	7	8	8
Increased potential for injury, death, damage or delays resulting from damage to or falling trees.	7	6	6
Lost tourism following storms or intense rainfall events.	6	7	7
Burst water supply pipes.	6	5	5
Increased potential human health risk as a result of sewer inundation.	5	6	6
Cleanup costs and disruptions from cars damaged/stranded by flash flooding.	5	6	6
Increased frequency and severity of public health risk from waterways. This is due to increased toxin concentrations entering waterways following intense rainfall events and reduced access for amenity purposes.	5	5	4
Public discontent due to reduced access to rivers and river banks for amenity and bike/pedestrian commuting purposes following intense rainfall events.	4	4	4

Table 1: City of Melbourne risk ratings identified and assessed for extreme heat and bushfire events. A risk rating above seven is considered critical by Council and leads to high-priority actions. From the **City of Melbourne climate change adaptation strategy and action plan**.

that have cross-sectoral and multi-stakeholder inputs. They cover the built environment, education and training, health and human services, natural environment, primary production, transport, and water cycle systems.

Victoria also has many regional-level supporting documents and strategies for adaptation planning. There are six regional adaptation action strategies. The most relevant for the SECCCA region is the Greater Melbourne Regional Climate Change Adaptation Action Strategy. The documents include the following themes: preparing for and recovering from emergencies; caring for the natural environment; improving health and well-being; strengthening the economy and workforce; improving the resilience of our built environment; and embracing renewable energy. The following have helpful and accessible information for businesses in their region: the Loddon–Mallee, the Grampians Region, and Gippsland.

The Greater Melbourne Regional Climate Change Adaptation Action Strategy has helpful lessons and reflections about 'doing adaptation' from their adaptation planning process (see Figure 5).

There are useful resources from the northern and western organisations equivalent to SECCCA. The Northern Alliance for Greenhouse Action has a collection of good local resources for businesses, although some links are out-of-date. The Western Alliance for Greenhouse Action has a very useful tool called the Adaptive Capacity Checklist. While it is designed for local councils to assess how well they are adapting, it allows anyone to quickly test their organisational capacity to adapt to climate change. Noting the language is more focused on local government, it could be useful for larger businesses that want to understand their organisational strengths, opportunities and priorities for adapting to climate change.

Why do we need to think about ways of doing adaptation?

'Doing' adaptation will be the natural result of all the thinking, talking and collaborating parts of our adaptation work. 'Doing' adaptation will be an on-going process – as long as there is change, we will need to adapt to that change. Adaptation is not something we can simply 'do' once and then forget about. It will mean slight or large alterations to nearly every aspect of our modern lives.

Our projects have revealed that adaptation can apply to how we deliver our day-to-day services, for example, modifying work hours during extreme heat waves. It can involve physically retrofitting old infrastructure or improving building materials and designs to cope better under more extreme conditions. It can also involve data-driven planning for the future in particularly exposed places and locations.

What did we learn?

» Systems thinking is a very useful approach for unravelling some of the key problems and opportunities that might emerge in several possible scenarios. It can be used as an initial approach to explore what's really happening in a part of the system prior to developing any action plans.

» The material costs of upgrading some of our most important community infrastructure may be much higher than we expect. There is an urgency in ensuring that any new buildings or other infrastructure are designed and built to take future climate conditions into account.

What ways did we try?

» We demonstrated the use of a 'systems thinking' approach to examine our complex city-region

» We delivered projects that examined material actions and costs in two asset vulnerability assessment projects.

» We examined how to ensure climate-resilient service delivery – exploring ways to keep functioning when the weather extremes make movement around the city-region challenging.

» We allocated time to explore scenarios and opportunities for action

» Our region is service-delivery intense: much of our workforce provides a range of services, upon which many people rely. How these services and supports are delivered during weather events such as heat-waves is very important to our region. Our projects have shown that simple tweaks and significant overhauls are required for the service-delivery industry to adapt to more extreme weather events.

» There are significant practicalities and benefits of deliberately allocating time to considering transformative ideas and opportunities.

» Having a learning and sharing mindset is critical as we adapt to climate change in our region. This includes monitoring what we do, evaluating its effectiveness, reporting so others can learn from it, and improving our approaches so we can do even better next time.

Figure 5: Reflections on adaptation from the Greater Melbourne Regional Climate Change Adaptation Strategy planning process.

4 — THERE ARE FEW BUSINESS-READY TOOLS FOR SMALL BUSINESSES

It is common for small businesses to prepare for risks to their business, even if they don't think about it as *risk management* or adaptation per se. However, there are surprisingly few simple and free business-ready tools to prepare for the risks of climate change (that is, to plan for adapting). This building climate-resilient businesses project arose from this identified gap via the Greater Melbourne Regional Climate Change Adaptation Strategy.

There are two free tools for businesses available online in Victoria and Queensland. The Victorian tool is available through Business Victoria and focuses on businesses being ready for any disaster. The Queensland tool is specifically designed as a business toolkit for climate adaptation. Both helpful and practical business planning tools can be adapted for the purpose of this project, which is to better equip businesses to practically build climate resilience.

The free tools available online from Business Victoria are based on a framework adopted by this project for business resilience. The framework (see Figure 6) suggests using the following four areas when considering building business resilience to disasters (such as climate change impacts):

- business resilience
- business preparedness and prevention
- business response and continuity
- business resumption and recovery.

As highlighted by Business Victoria, there are many relevant factors for businesses to consider when planning for a disaster. They include:

- any evacuation and emergency contacts needed
- your people, assets, resources and operations
- business information, data and systems that might need to continue to function
- products, goods and services you sell or buy
- finances and financial management of your business
- logistics and supply chains required for operation
- insurance in case the worst happens
- new or different commercial arrangements you may need to plan or enter into
- professional support and networks to help you by learning from others
- partnerships, customers and communications so your clients know what is happening
- grants and government funding that might be available for you to help recover or prepare.

Figure 6: The four areas to use when considering business resilience, as suggested by Business Victoria for small businesses.

1	Business resilience	Ready your business to adapt to disasters
2	Business preparedness and prevention	Reducing business disruptions from disasters
3	Business response and continuity	Continuing to operate during disasters
4	Business resumption and recovery	Getting your operations back to business as usual

Every business is unique. There's no single approach to building disaster resilience. This may seem like a big task, but it's easier than it seems.

The Business Victoria online business toolkit for disaster resilience is designed to help businesses to identify what makes their business resilient to all disasters, help prepare before any disaster, understand how to keep a business trading safely during any kind of disaster, and get the business back up and running after any disaster. The principles and approach are applicable to climate adaptation planning.

Other related tools on the Business Victoria site help businesses more broadly evaluate risk, prepare a risk management plan, and respond after a crisis. There is also a page for businesses to understand and apply for grants and programs for various uses. There are some grants for businesses to prepare for climate change (particularly for reducing emissions) and implement other business changes. The grants and programs differ in scope, availability and focus.

The Queensland Government has developed a specific climate change risk management tool for small businesses in Queensland. While created for Queensland climate change conditions, the general approach, steps and principles are applicable in any region. The tool includes a checklist for rapid climate change risk screening, a checklist for climate change risk assessment and action plan development, a helpful information booklet and a case study that runs through the checklist for climate change risk assessment and action plan development.

Finally, SECCCA has produced the *Small business climate adaptation toolkit* to assist building climate-resilient businesses. The Toolkit and case studies are available for free online at the SECCCA website.