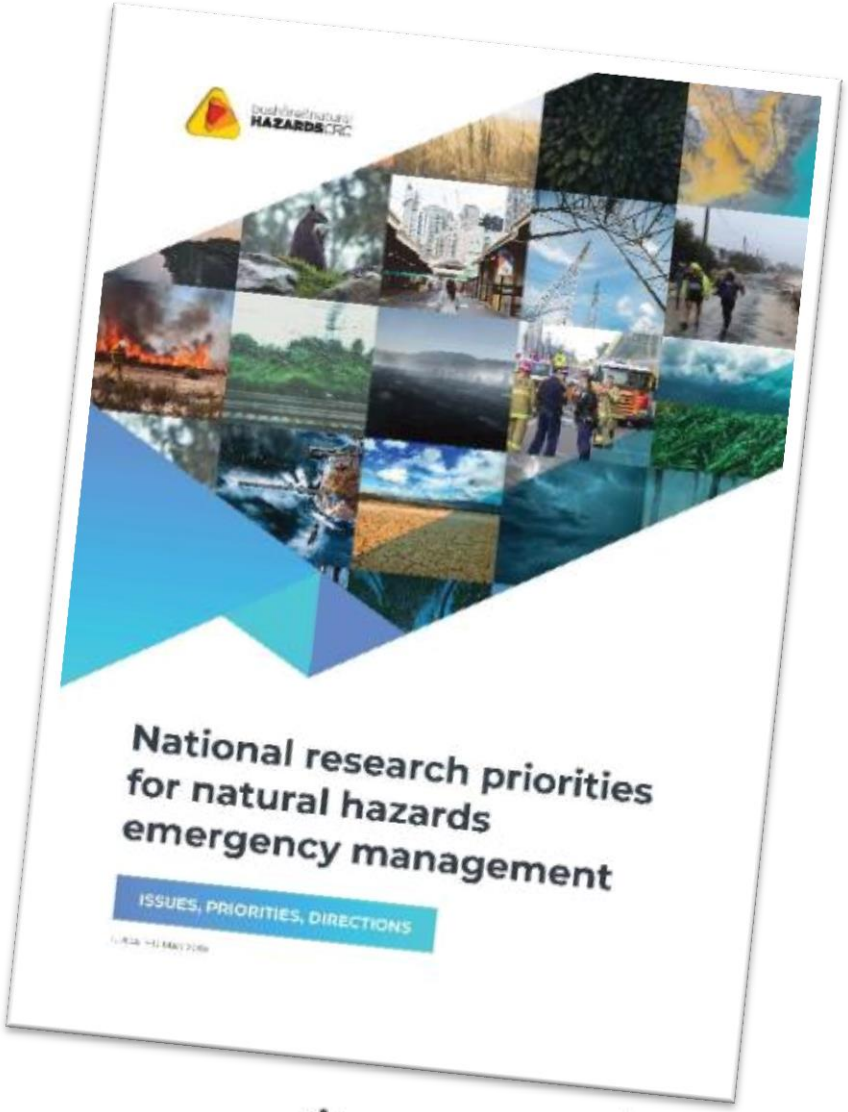
Research Priorities and Challenges

Presentation to Emergency Management Conference
May 2019

Dr Richard Thornton
Chief Executive Officer



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Australian Government
Department of Industry, Innovation and Science

Business Cooperative Research Centres Programme

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Overview

- Drivers of risk
- Priority setting
- Research priorities
- Key outcomes

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Drivers of risk

- Climate change and climate extremes

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State of the Australian climate

- Australia's climate has warmed by just over 1 °C since 1910, leading to an increase in the frequency of extreme heat events.
- Oceans around Australia have warmed by around 1 °C since 1910, contributing to longer and more frequent marine heatwaves.
- Sea levels are rising around Australia, increasing the risk of inundation.
- There has been a decline of around 11 per cent in April–October rainfall in the southeast of Australia since the late 1990s.
- There has been a long-term increase in extreme fire weather, and in the length of the fire season, across large parts of Australia.

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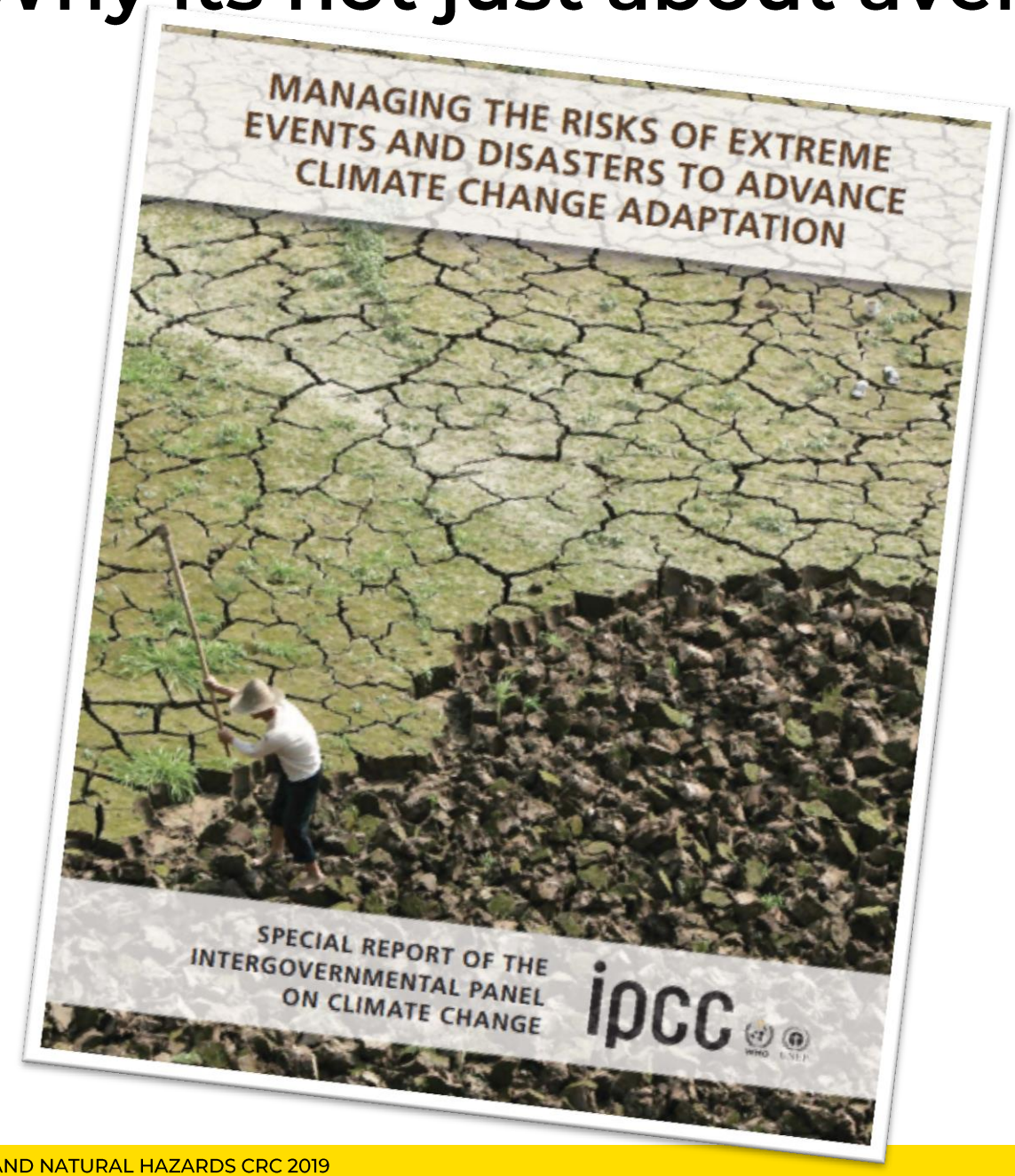
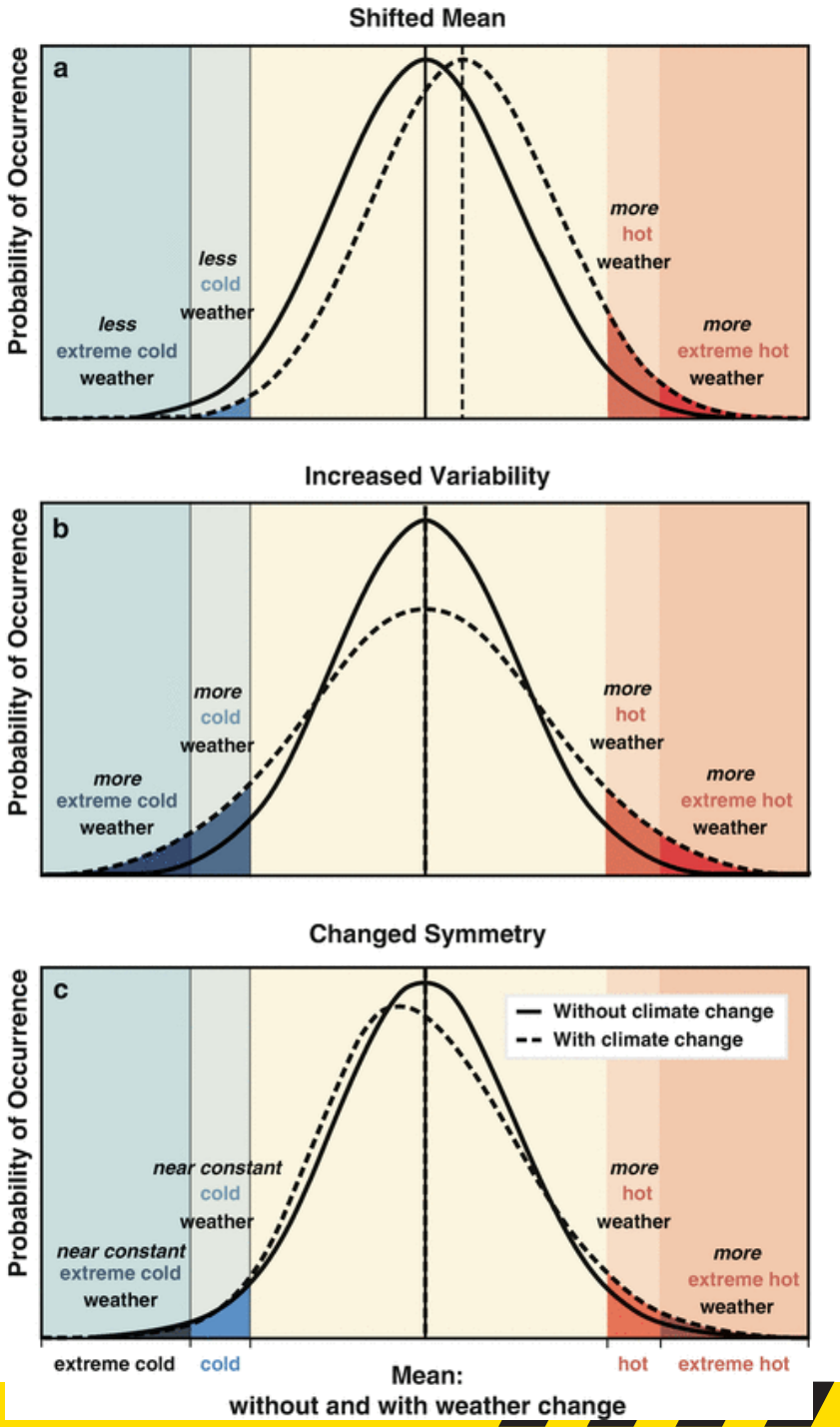
Why its not just about averages





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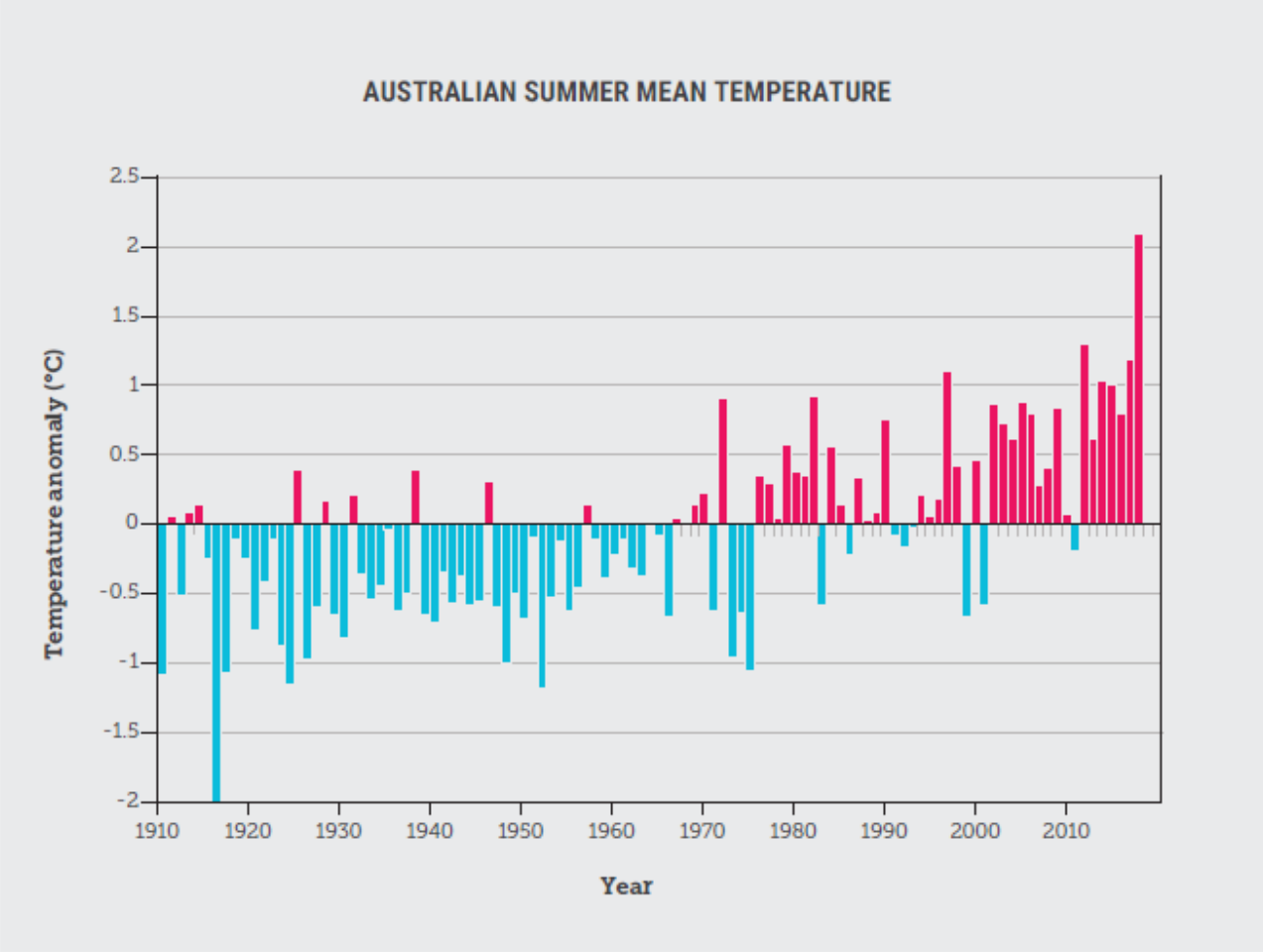

Figure 1: Summer temperatures have been rising steeply in Australia over recent decades. **Source**: BoM (2019a).

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Drivers of risk

- Demographics and vulnerability

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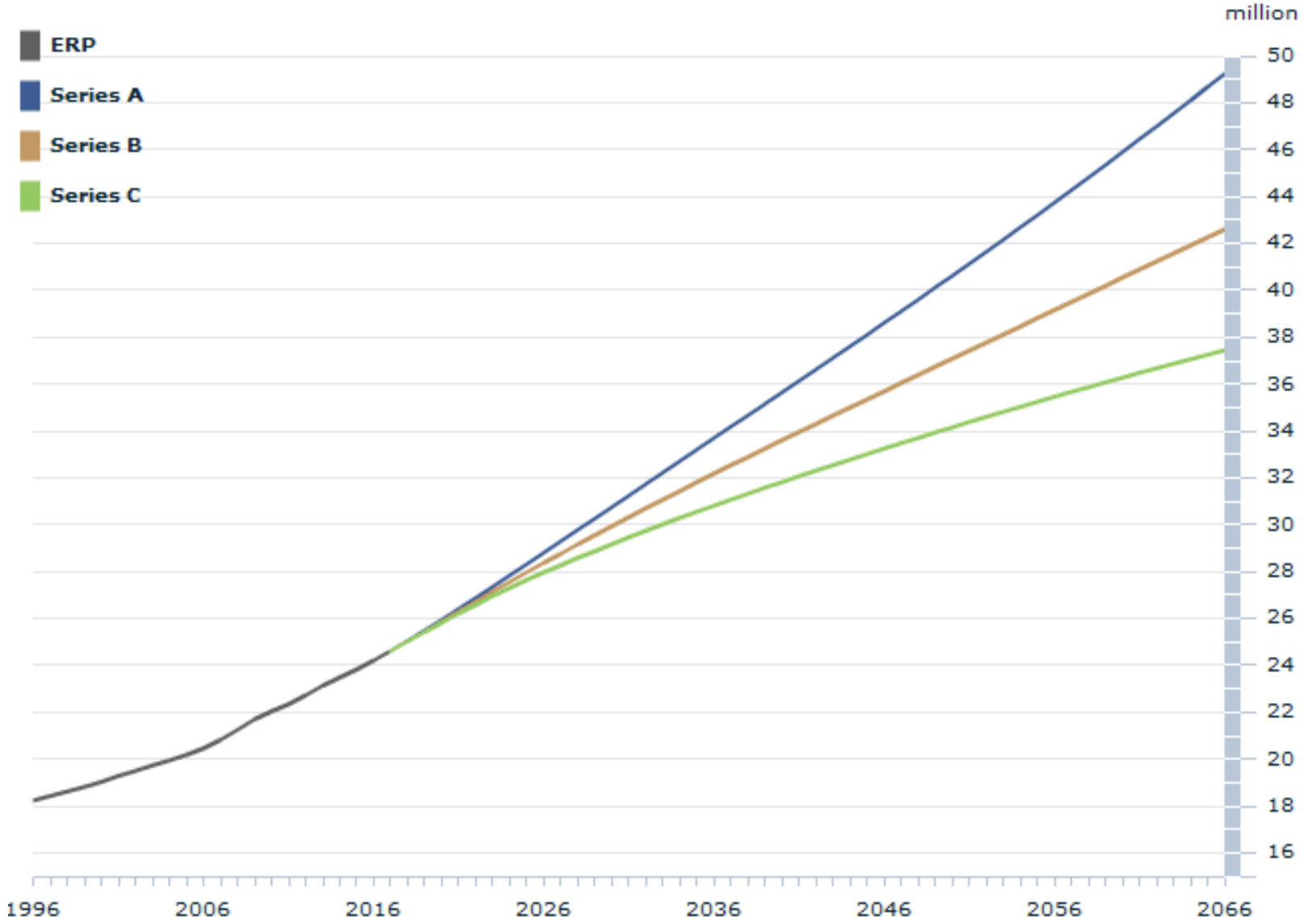
Australia's population is growing

- Based on current trends, Australia's population is projected to reach 30 million people between 2029 and 2033



Source: ABS 2018

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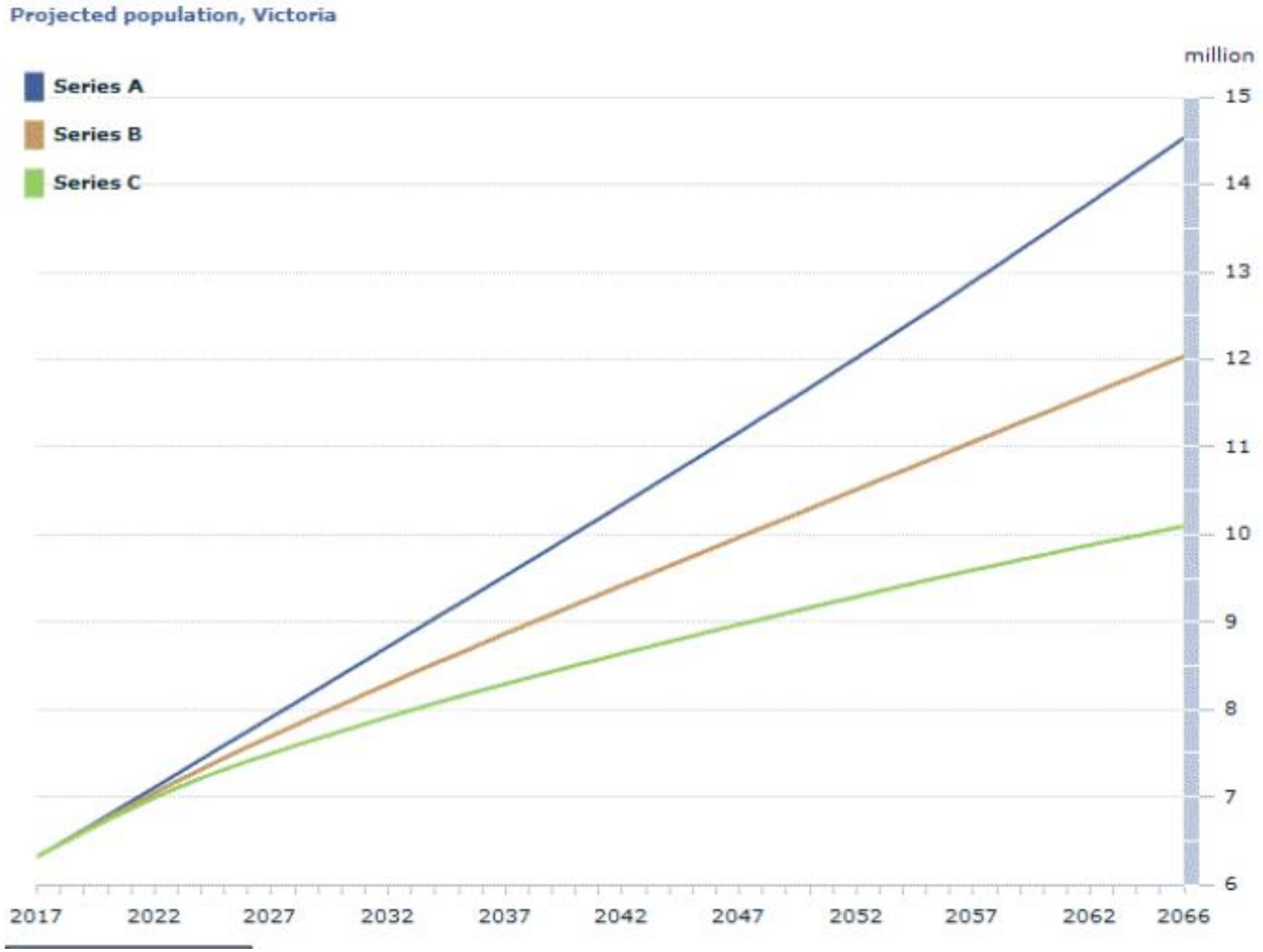
Victoria's population is growing

- Victoria is projected to experience the largest and fastest increase in population; possibly reaching between 7 and 8 million by 2027.
- Net overseas migration in 2016-17 into Victoria was almost 90,000



Source: ABS 2018

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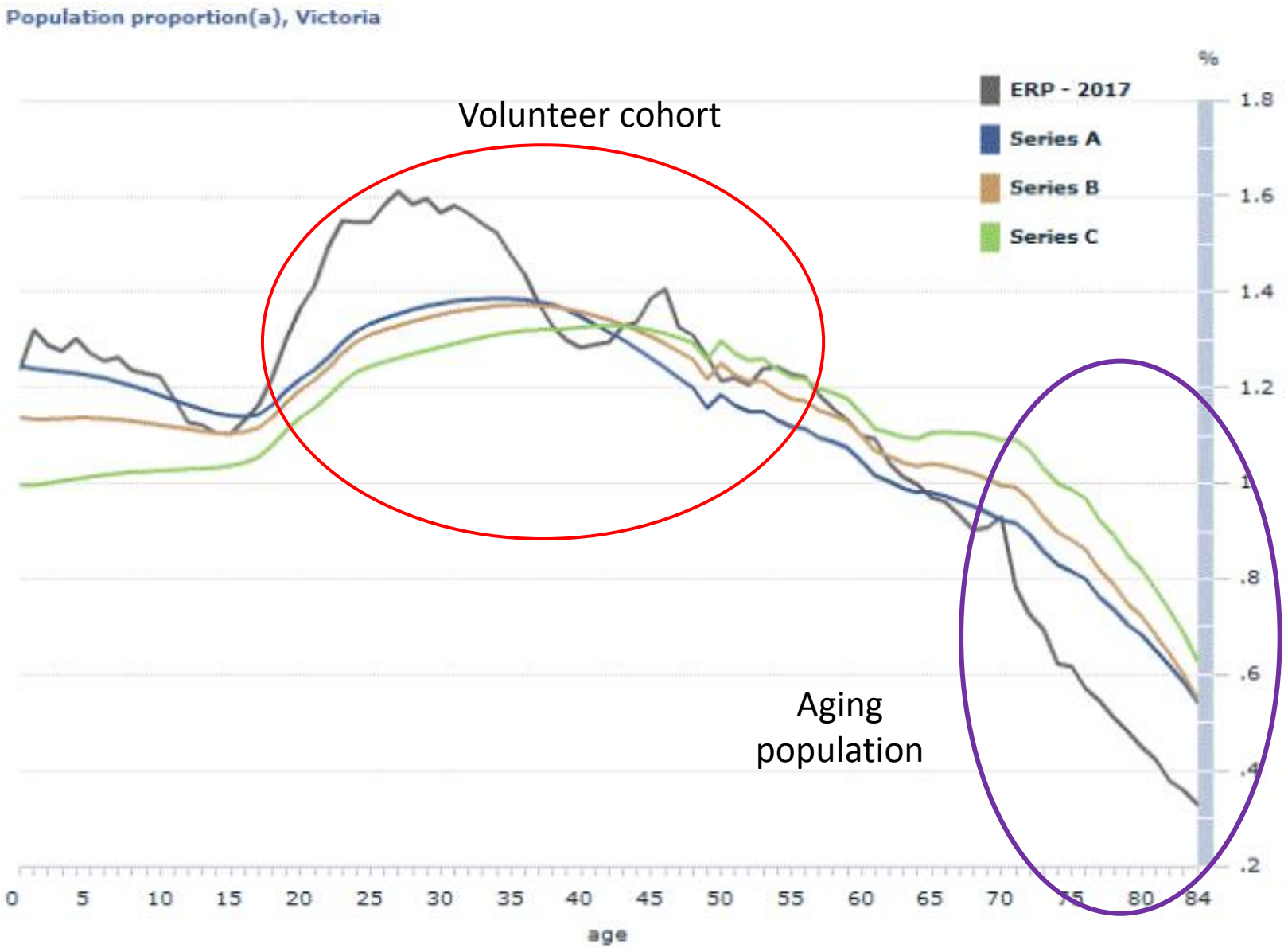
Victoria's population is Aging

- The age structure in 2066 for Victoria
- Volunteering cohort decline as Percentage of population
- Aged demographic increases vulnerability



The number of Australians aged 85 years and over is projected to double by 2042, increasing to over 1 million people

Source: ABS 2018

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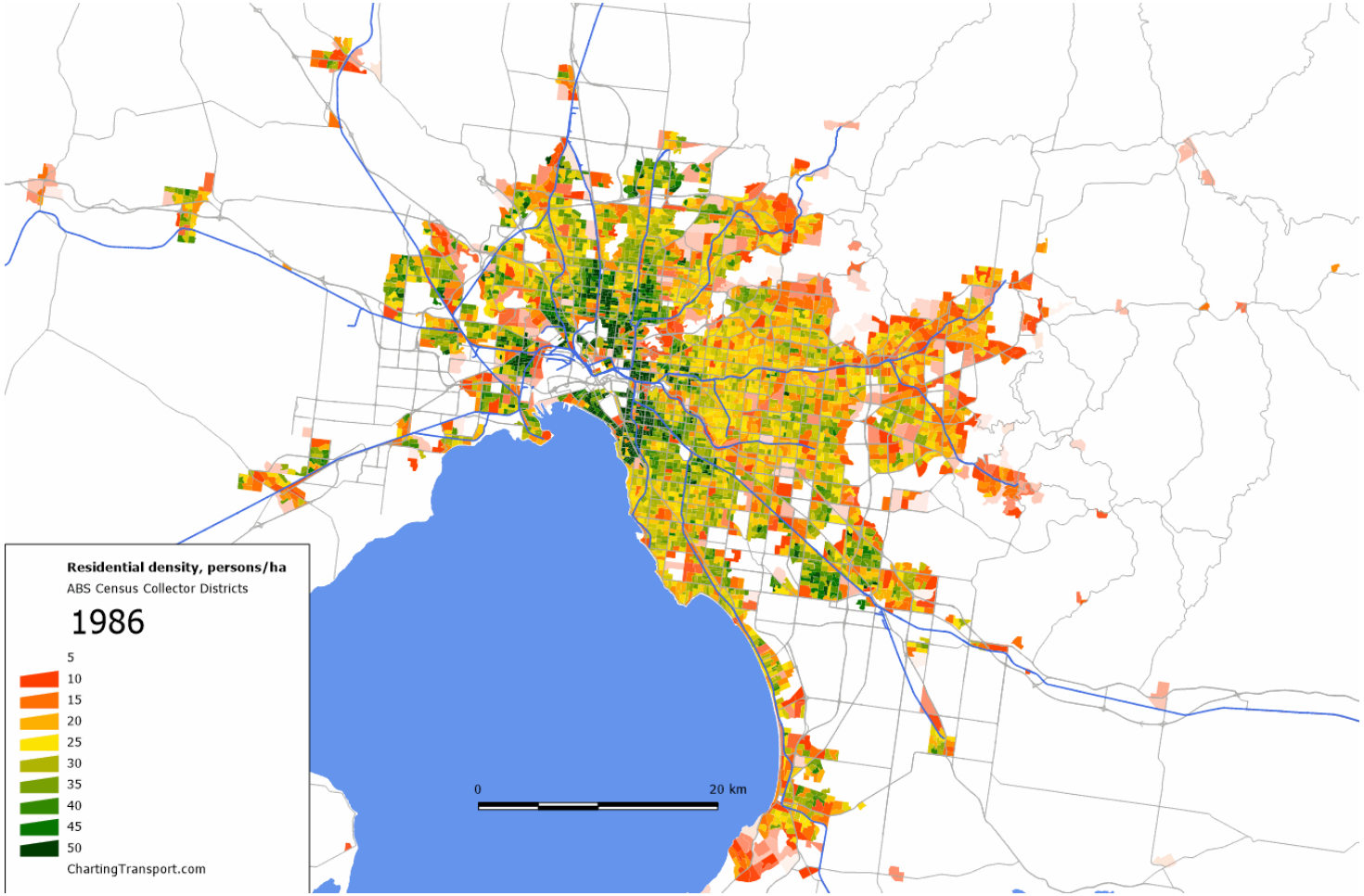
Urban development



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Drivers of risk

- Technology
  - Good and bad

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‘New’ Challenges
- What else don’t we know about?

WHY IS AN ELECTRIC CAR FIRE SO DIFFICULT TO EXTINGUISH?

Tackling a battery fire requires special assistance and "emergency response guides" have been published to help firefighters.

Tesla admits battery fires can take 24 hours to fully extinguish and can easily re-ignite.

Tesla also details the huge amount of water needed to cool the battery, the position to cut through to stop the power - plus the risk of death in touching the power cables without switching it off first.

Sulphuric acid, nickel, lithium, copper and cobalt are all emitted when an electric car goes up in flames making it essential crews have respiratory equipment to hand, too.

And Tesla suggests "quarantining" the motor for 48 hours to stop a new fire breaking out. ■

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Drivers of risk

- Costs
  - Economic and Social

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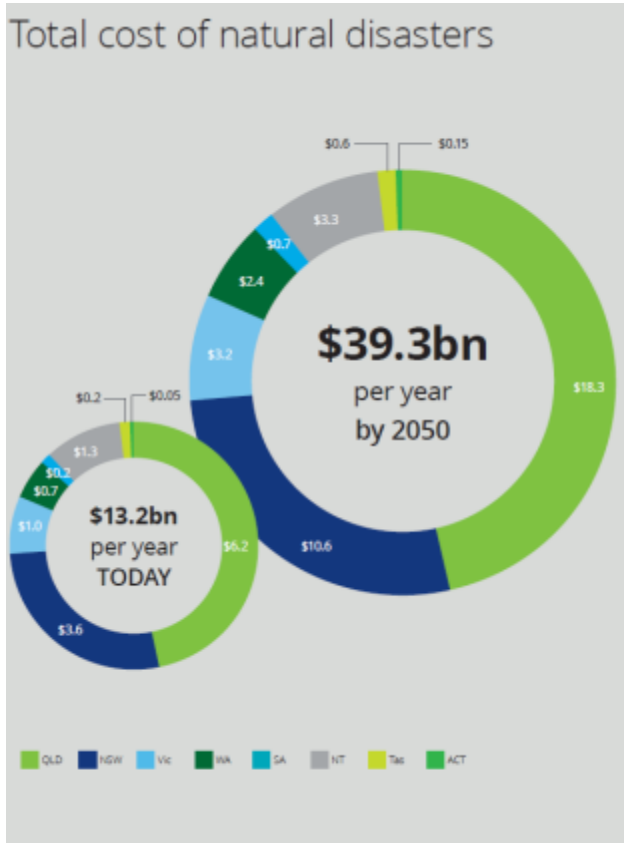
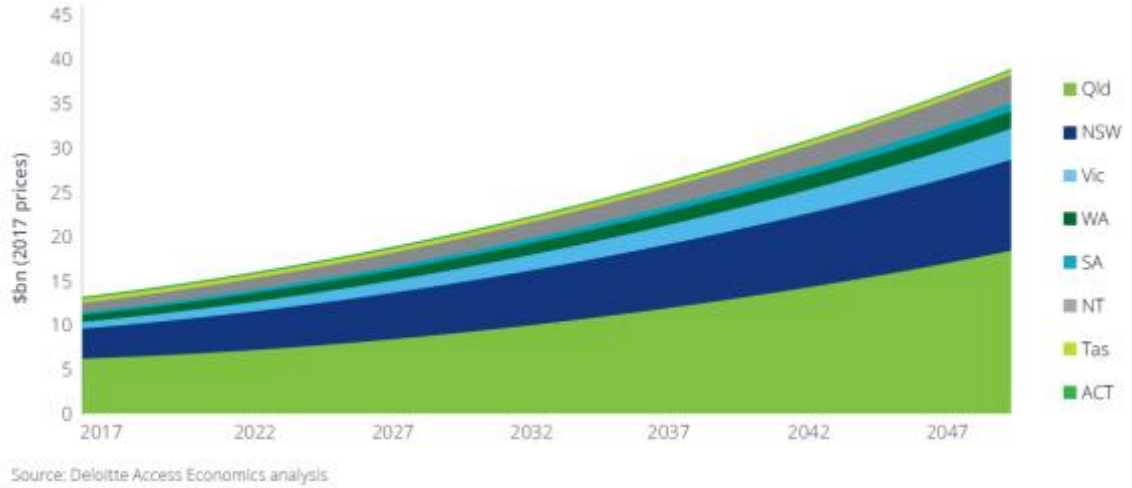
$39.3B per year by 2050





Source: Building resilience to natural disasters in our states and territories – Deloitte Access Economics 2018

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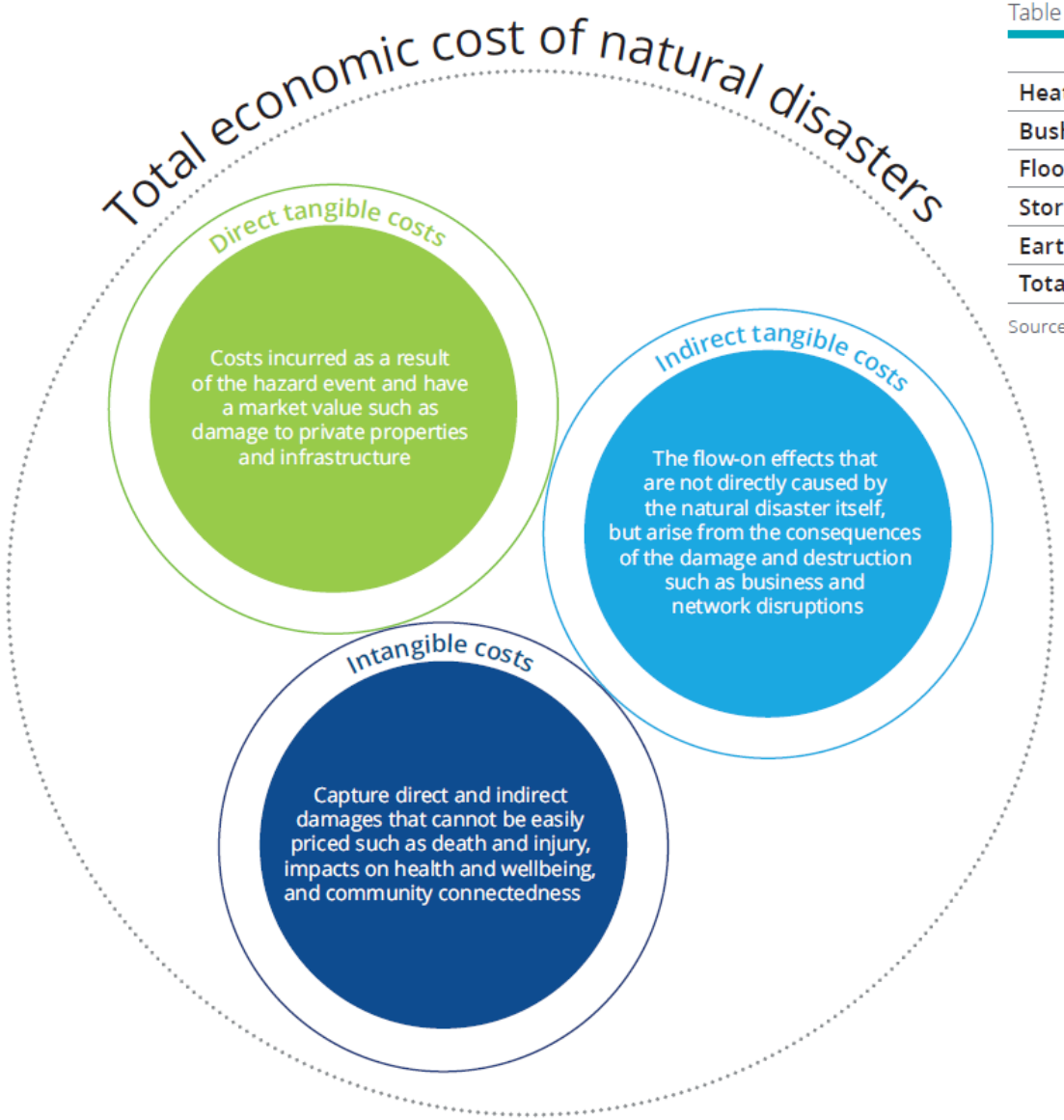


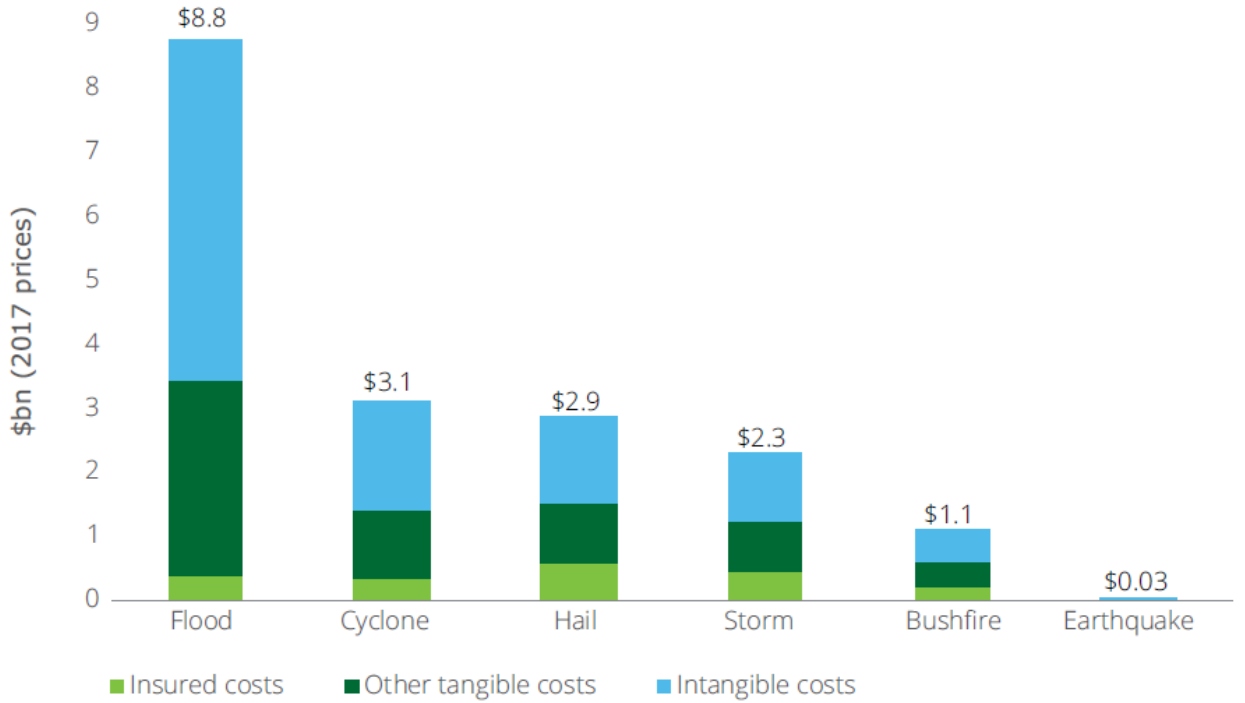
Source: Deloitte Access Economics (2016) adapted from Productivity Commission (2014)

Table 2.1: Social impacts of natural disasters in Australia, 1987 to 2016

	Deaths	Injuries	Homeless	Total persons affected
Heatwaves	509	2,800	–	4,603,000
Bushfire	218	1,000	2,600	69,000
Flood	143	90	6,000	293,000
Storm	89	360	15,500	4,057,000
Earthquake	12	120	20	7,140
Total	971	4,370	24,120	9,029,000

Source: EM-DAT database (2017), *figures in some columns have been rounded.

Chart 2.2: Average annual economic cost, tangible costs and insured costs by disaster type*, 2007 to 2016



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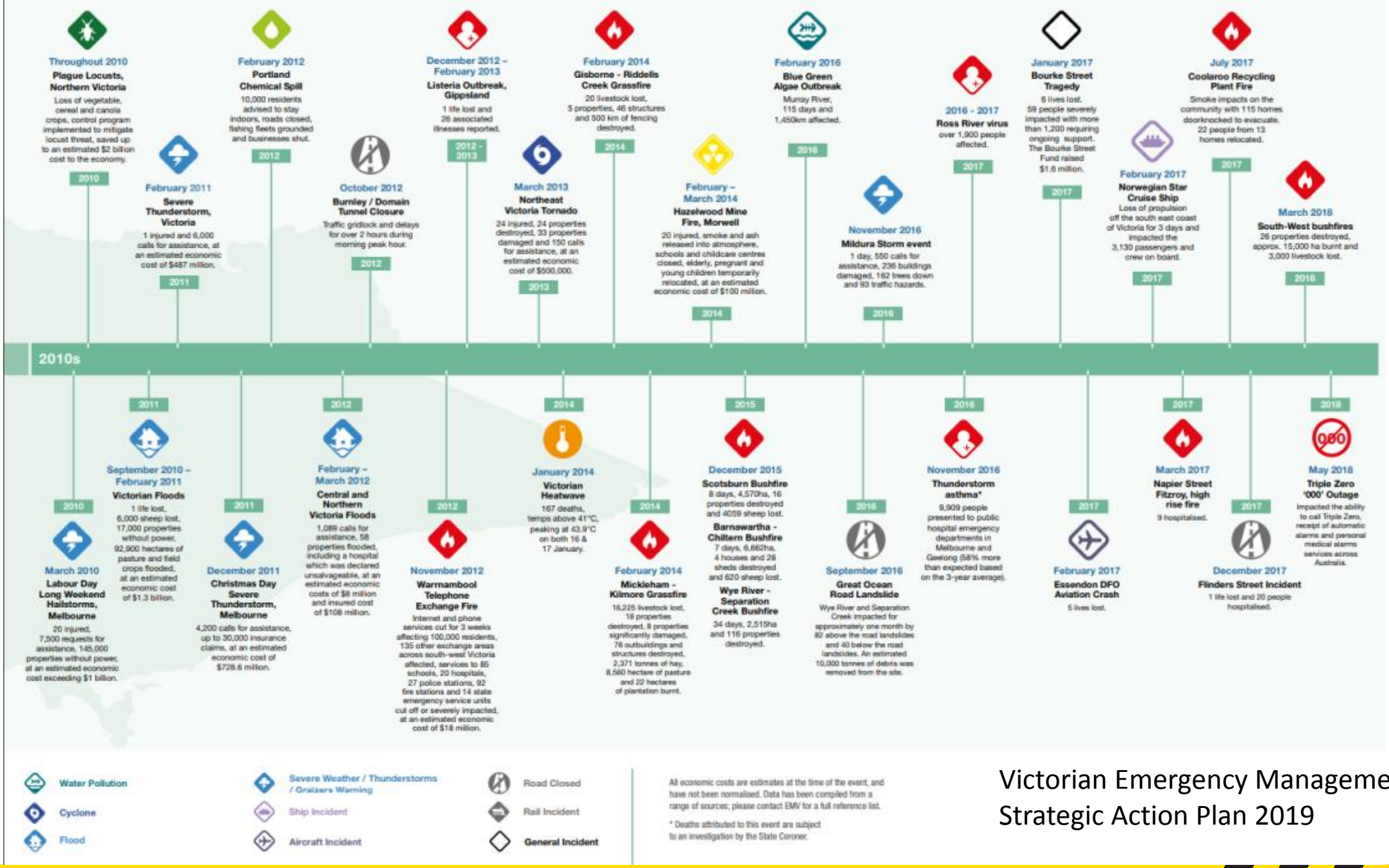

Victorian Emergency Management Strategic Action Plan 2019

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Drivers

- National and international drivers

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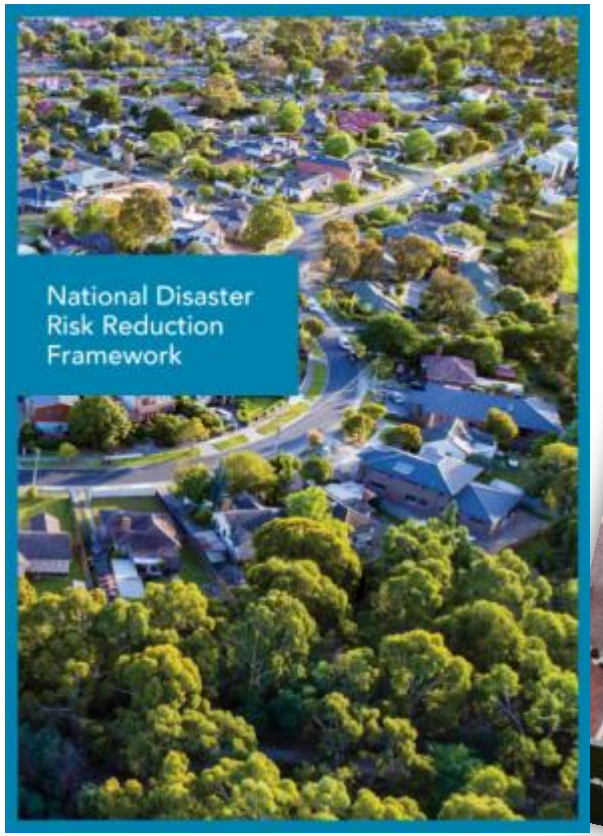

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Research Priorities

EM research 2009- 2021 was $283 million, or approximately $23.6 million a year, and noted

"... has been relatively little research on the effect of mitigation and the social and psychological impacts of disasters relative to other areas.

Funding comes from a variety of different sources, but needs to be co-ordinated to support long-term research ... rather than individual short term projects.

Government is the primary source of the bulk of research funding for natural disaster research.

The Australian Business Roundtable for Disaster Resilience and Safer Communities

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Natural

Bushfire

Floods

Extreme weather and coastal impacts

Social

Community safety

Community engagement

Remote communities

Recovery

Urban operations

Work, health and safety

Capability

Volunteering

Diversity in emergency management

Economic

Economics and policy

Insurance

Infrastructure

Built environment

Urban planning

Electricity networks

Major issues

- 17 National workshops
- Co-hosted by a peak-body, AFAC Group or ANZEMC Committee
- Across four pillars
- Each workshop determined highest priority issues
- Key common areas identified

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Four common themes

Shared responsibility and community engagement

Communicating risk and understanding the benefits of mitigation

Impacts of climate change

Predictive services, data and warnings

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Shared Responsibility and Community engagement

ENSURING GOVERNMENT AND AGENCIES ENABLE COMMUNITIES TO MANAGE THEIR OWN RISKS.

ENSURING GOVERNMENT COLLABORATES WITH COMMUNITY TO BREAK DOWN SILOS AND BUILD TRUST AND EFFECTIVE PARTNERSHIPS.

DEVELOPING COMMUNITY ENGAGEMENT MODELS THAT CAN MOST EFFECTIVELY BUILD CAPABILITY AND PARTNERSHIPS IN SUPPORT OF ENHANCED DISASTER RESILIENCE.

BUILDING COMMUNITY ENGAGEMENT CAPACITY WITHIN AND ACROSS SECTORS.

ENSURING EMERGENCY MANAGEMENT SECTOR ORGANISATIONS BUILD EFFECTIVE PARTNERSHIPS WITH EACH OTHER AND THE COMMUNITY ACROSS PREVENTION, PREPAREDNESS, RESPONSE AND RECOVERY.

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Communicating risk and understanding the benefits of mitigation

Improving access to data to enable comprehensive risk analysis to be undertaken and to support new operational capabilities.

Better quantification of the potential long term costs and benefits of mitigation.

Improving communication on the costs and benefits of enhanced investment in mitigation.

Understanding how risk information is perceived and processed by decision makers and ensuring that risk communication becomes an effective driver for action.

Better identification of the ownership and impact of risk, and identify those with the responsibility to act to mitigate impacts.

Understanding how investment in changing behaviour at different levels, supports improving disaster resilience.

Encouraging new and existing partnerships to deliver change.

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Impacts of climate change

THE EFFECTS OF CLIMATE CHANGE ON HAZARD PROFILES IN AUSTRALIA.

BUILDING MITIGATION ACTIVITIES DIRECTLY INTO RECOVERY PROCESSES AS A RESPONSE TO AND RECOVERY FROM EMERGENCY EVENTS AND CLIMATE CHANGE.

INFLUENCING DECISION MAKERS AND THE PUBLIC TO INCORPORATE CLIMATE SCIENCE INTO OPERATIONS.

CALCULATING THE IMPACTS AT DIFFERENT LEVELS (INDIVIDUAL, COMMUNITY, ECONOMY) OF MULTIPLE AND CUMULATIVE DISASTER EVENTS.

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Predictive services, data and warnings

As demand for information grows, meeting the expectations of accuracy, availability, clarity and communication to potential users.

Improving early warnings of a severe event to better inform response action, particularly events that have low probability but very severe impacts.

Combining community exposure and vulnerability data with hazard predictions to make quantitative predictions of impacts of an event.

Identifying technologies that should be invested in for more effective warnings and warning dissemination - including technical, visual and spatial options.

Improving the use of social media as a 'two- way' conversation with communities and to share innovation and good practice across agencies.

Understanding how the emergency management sector can enable greater national consistency of warning frameworks across jurisdictions.

Building better partnerships between the emergency management sector with third parties to improve the development and dissemination of warnings.

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Post 2021? -

Building a disaster resilient Australia on a solid foundation of expertise, evidence and networks.

A dedicated national disaster risk and resilience research institute, accessible to all, significantly reducing the impact of hazards and disasters in Australia

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