CLIMATE CHANGE IMPACTS & OUR CITIES

CITIES POWER PARTNERSHIP

Lesley Hughes

CITIES POWER PARTNERSHIP

#1 Largest climate & energy program for local government

101 Member councils

Representing 11+ million Australians

CLIMATE COUNCIL

THE IPCC SPECIAL REPORT ON GLOBAL WARMING OF 1.5°C

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BURNING OF FOSSIL FUELS IS DRIVING DRAMATIC CHANGES IN THE CLIMATE SYSTEM

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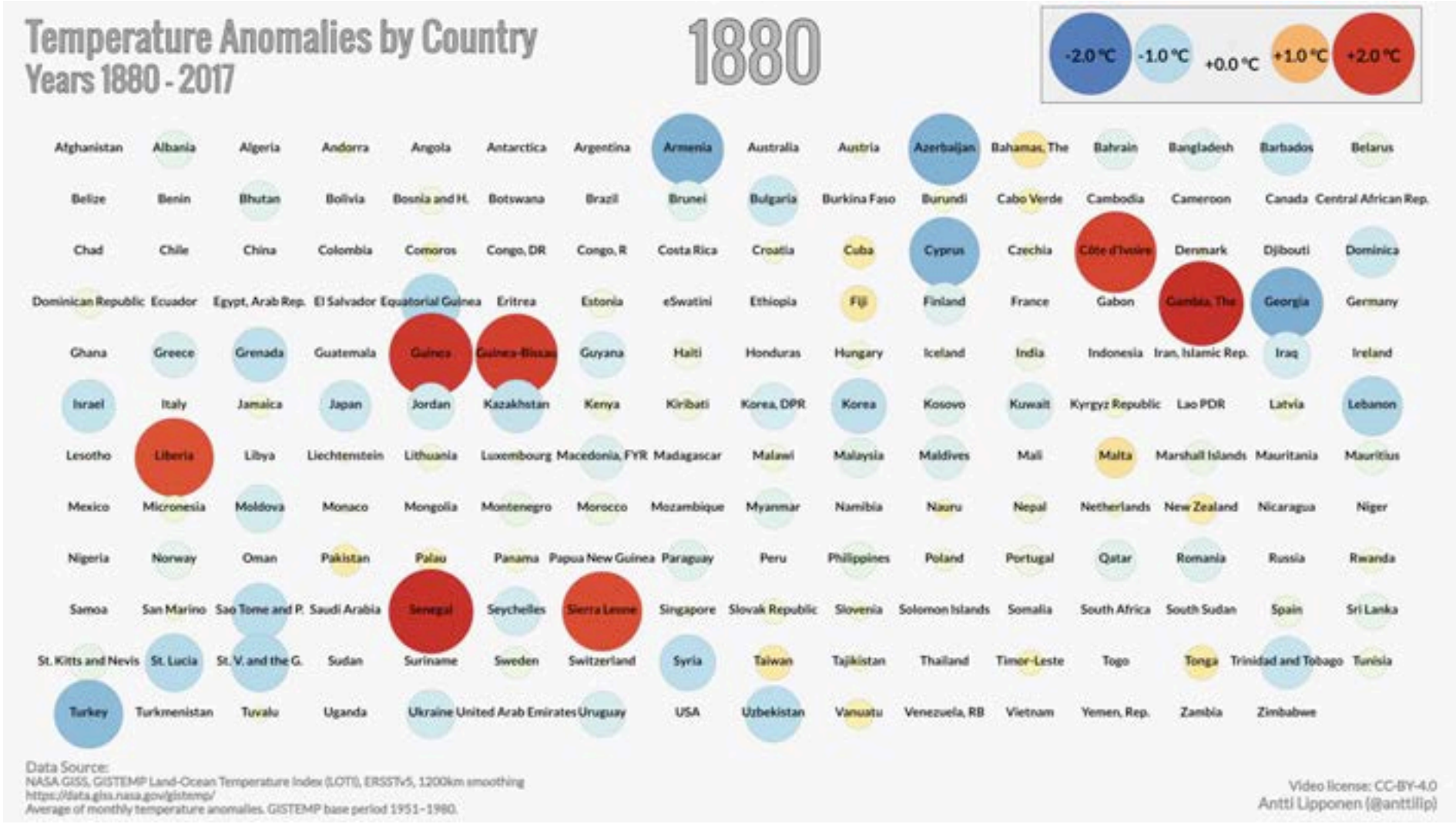
• CO_2 now at 411 ppm
• Human activities have caused 1°C warming compared to pre-industrial (range 0.8-1.2°C)



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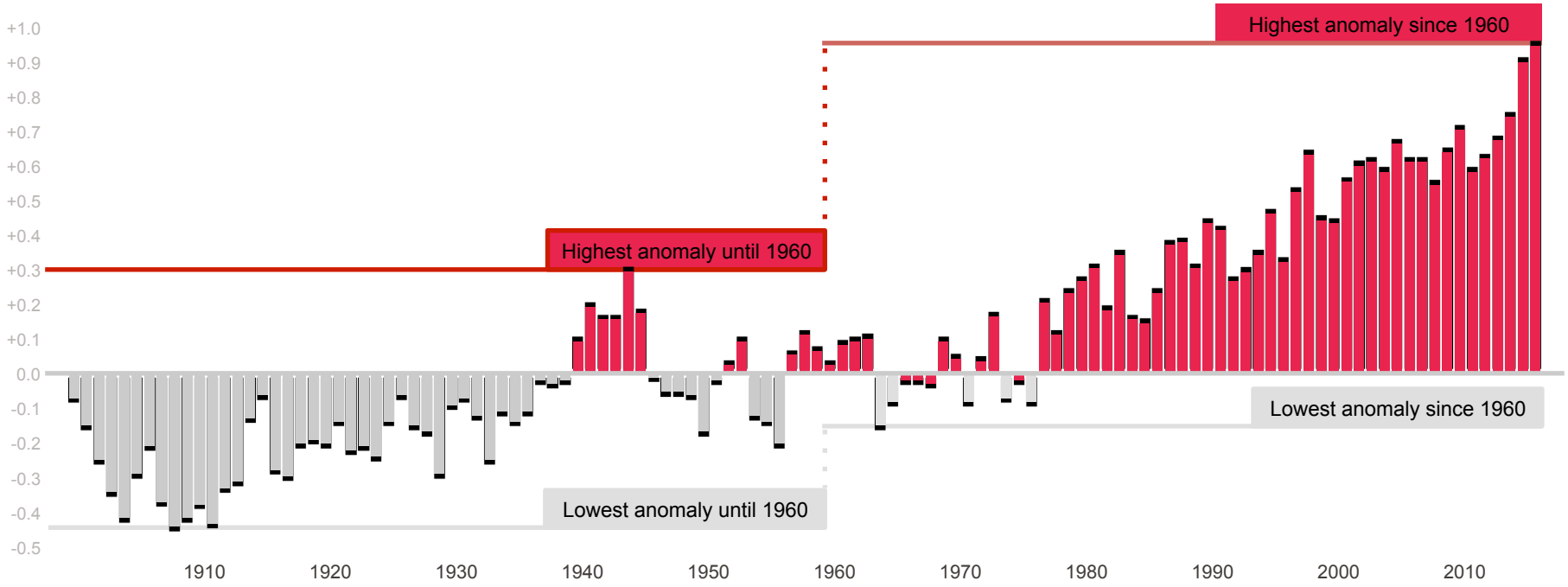
RAPIDLY RISING TEMPERATURES

1910 - 2016



Annual global temperature anomalies to 2016, relative to the global annual average temperature for the 20th century (1901-2000). Data from the US National Oceanic and Atmospheric Administration (NOAA).

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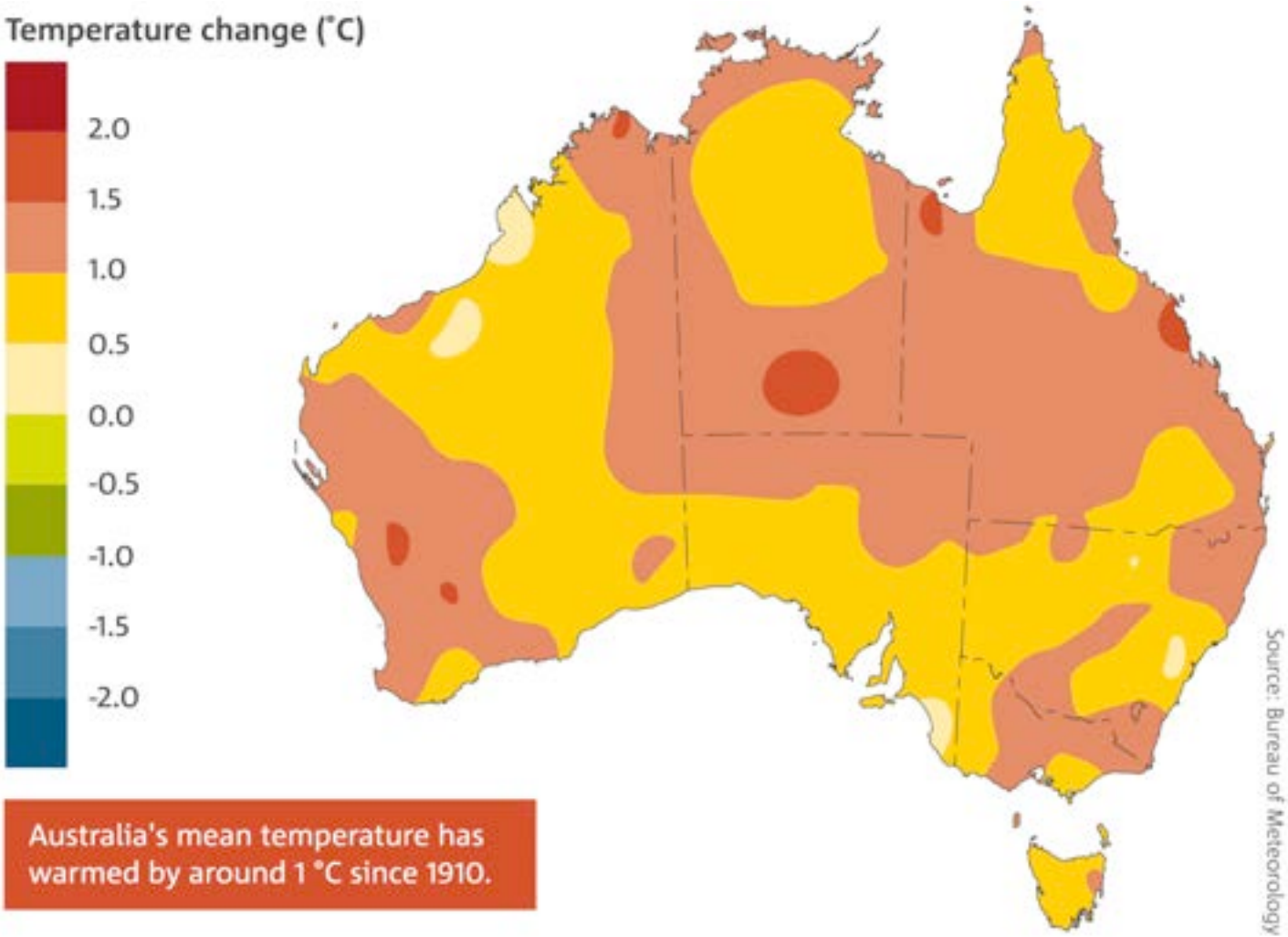
RAPIDLY RISING TEMPERATURES



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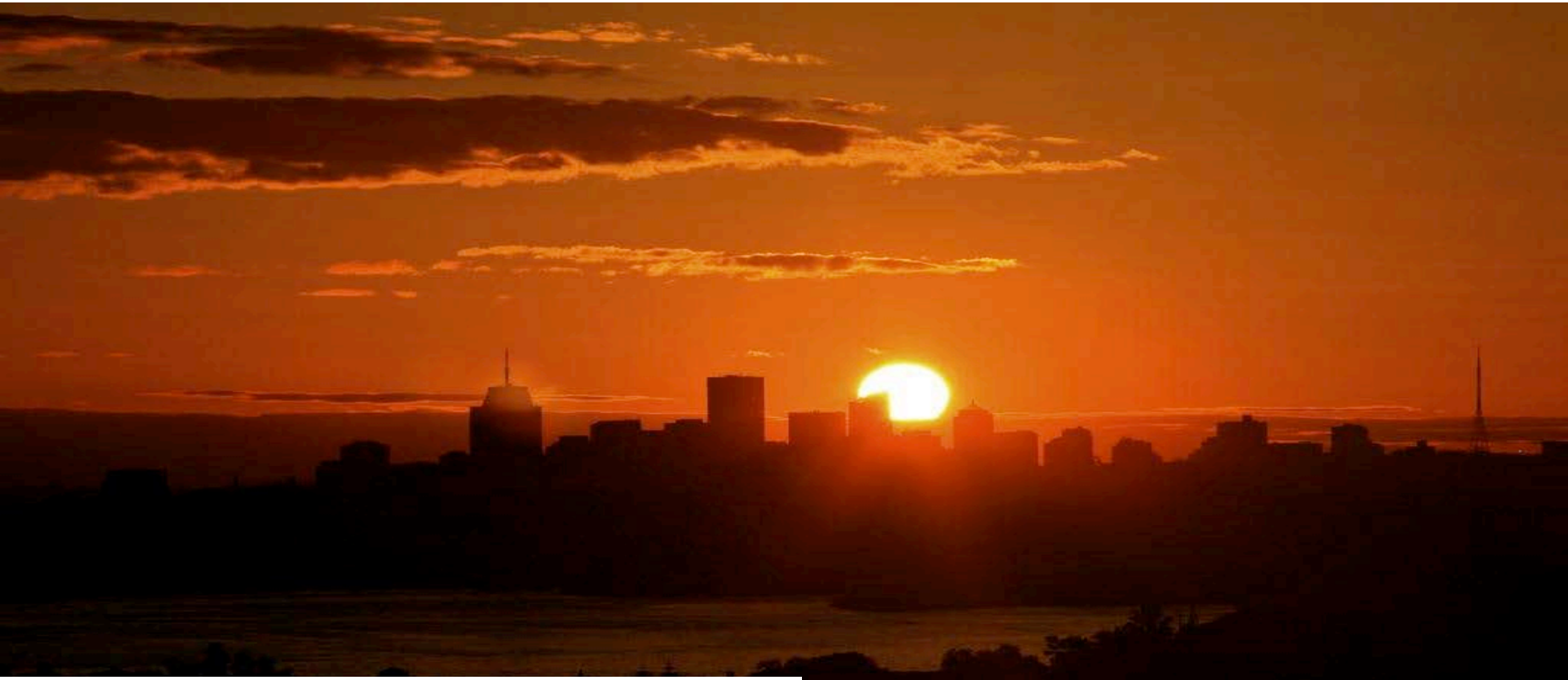

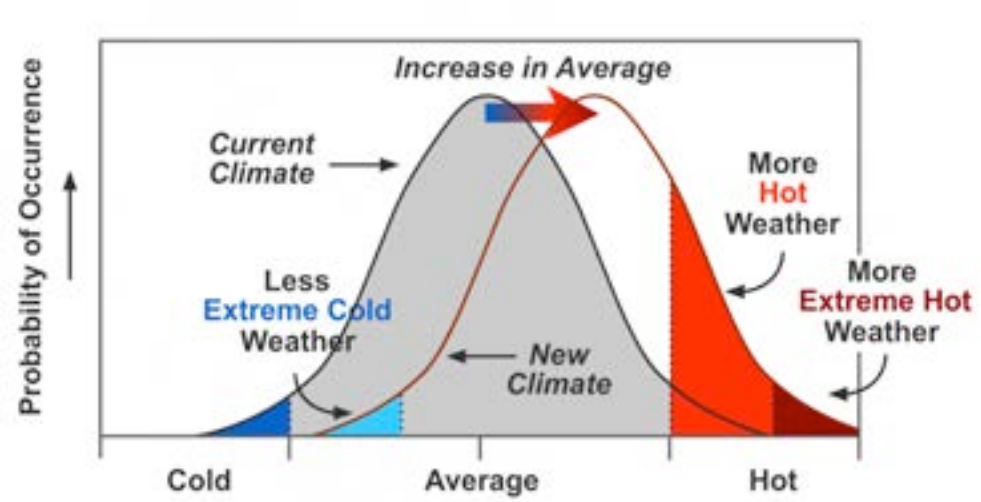

HEATWAVES

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- 2 x no. extreme hot days now compared to 1960s
- Heatwaves kill more people in Australia than any other climate-related event

HEATWAVES

CLIMATE COUNCIL

MARINE HEATWAVES

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- 2016: worst ever bleaching event worldwide, including GBR (175 x more likely due to climate change)
- SSTs 1-2^{o}C higher than long-term average
- GBR bleached again in 2017

MARINE HEATWAVES

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BUSHFIRES

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- **Bushfire seasons longer, more severe since 1970s**

BUSHFIRES

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DROUGHTS AND EXTREME RAINFALL

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- Water cycle intensifying
- Droughts in SE & SW becoming more severe
- Rainfall events more intense

DROUGHTS AND EXTREME RAINFALL

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STORMS

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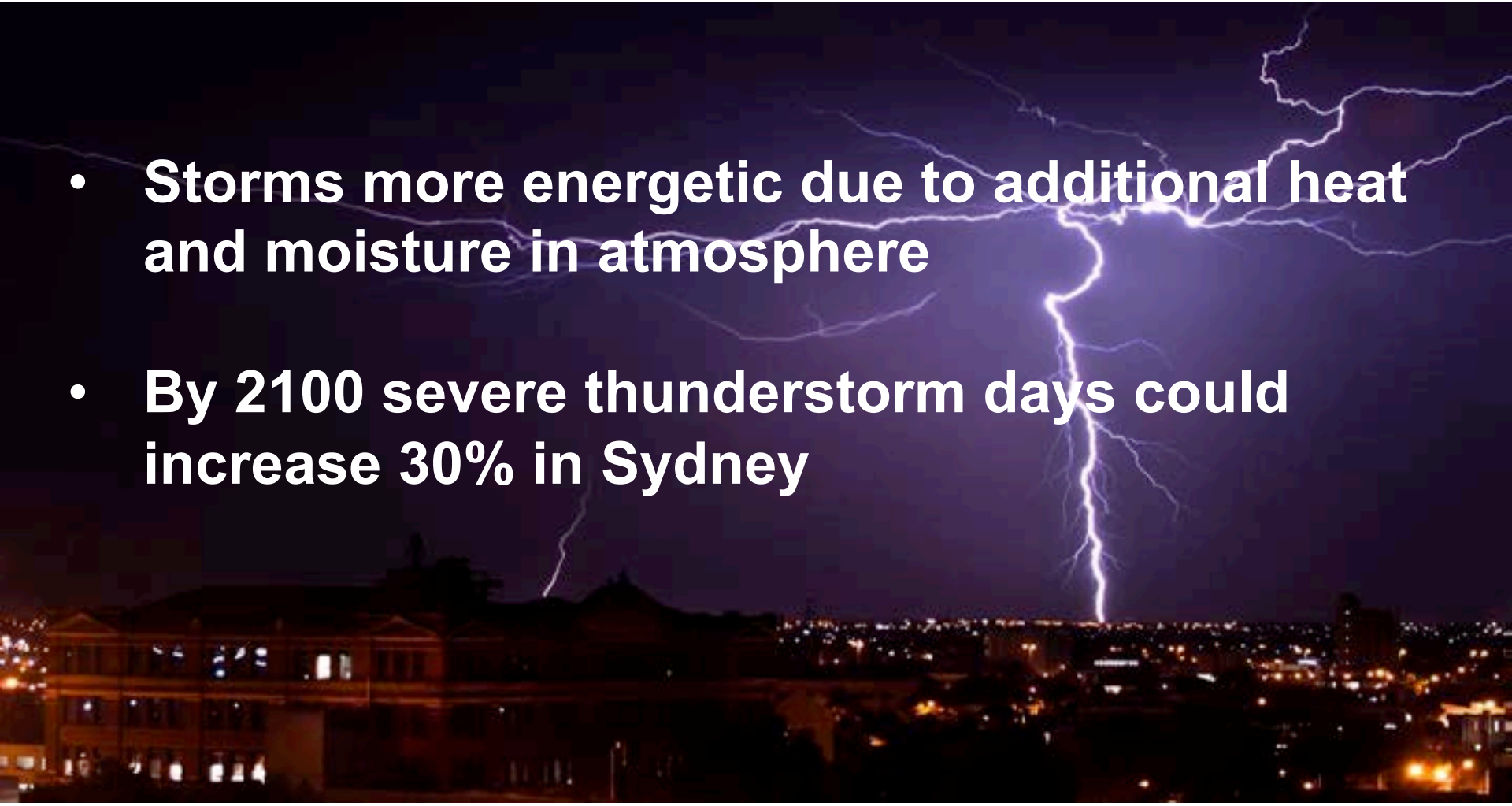

STORMS

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ECOSYSTEMS

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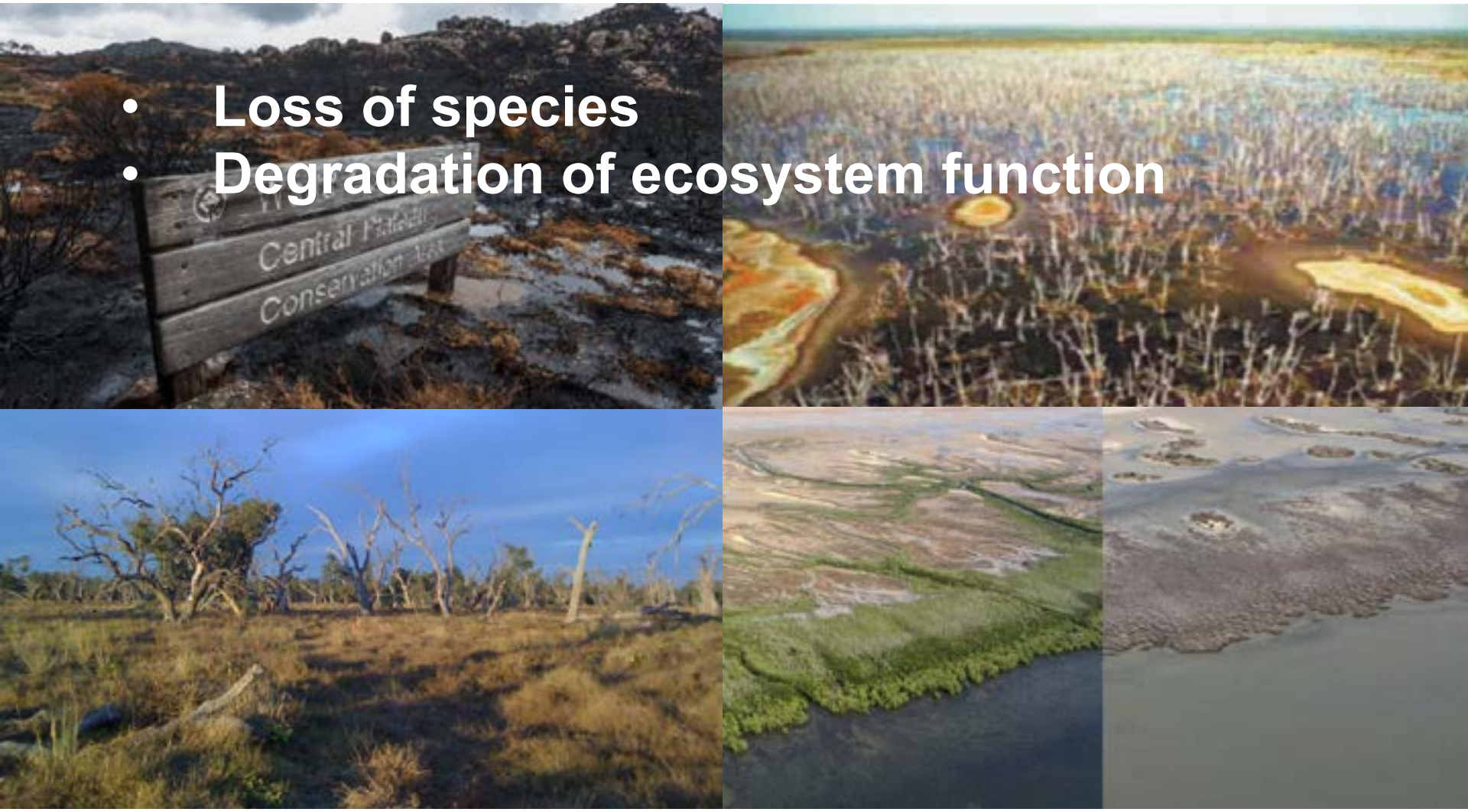

ECOSYSTEMS

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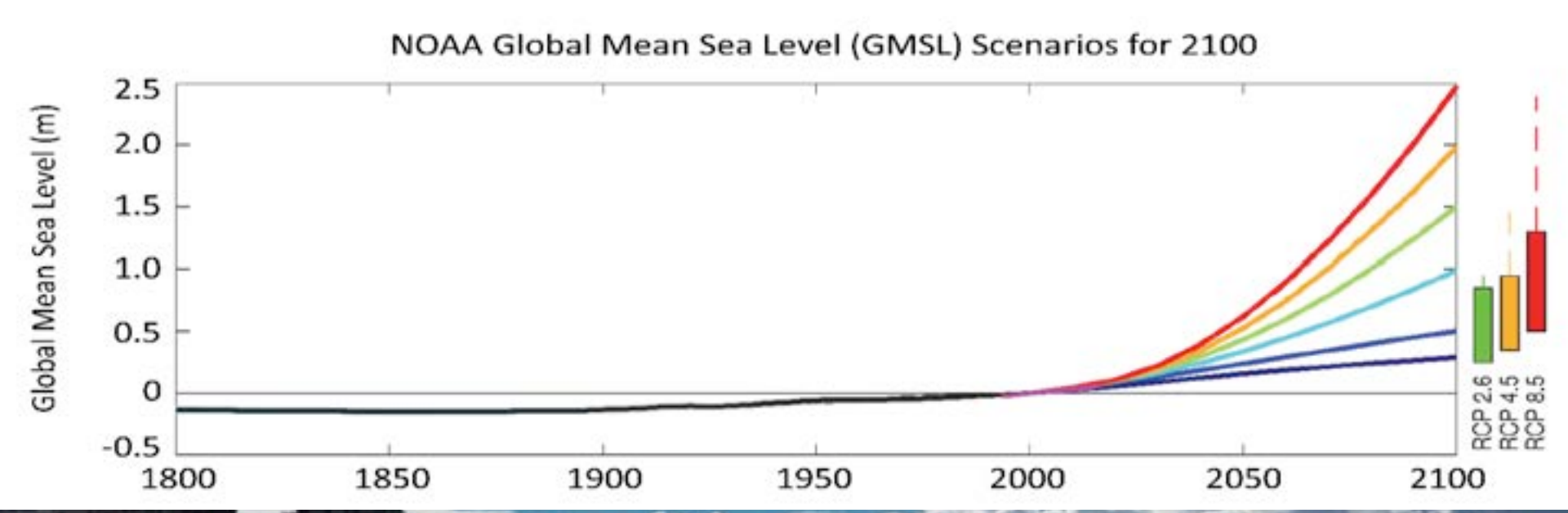
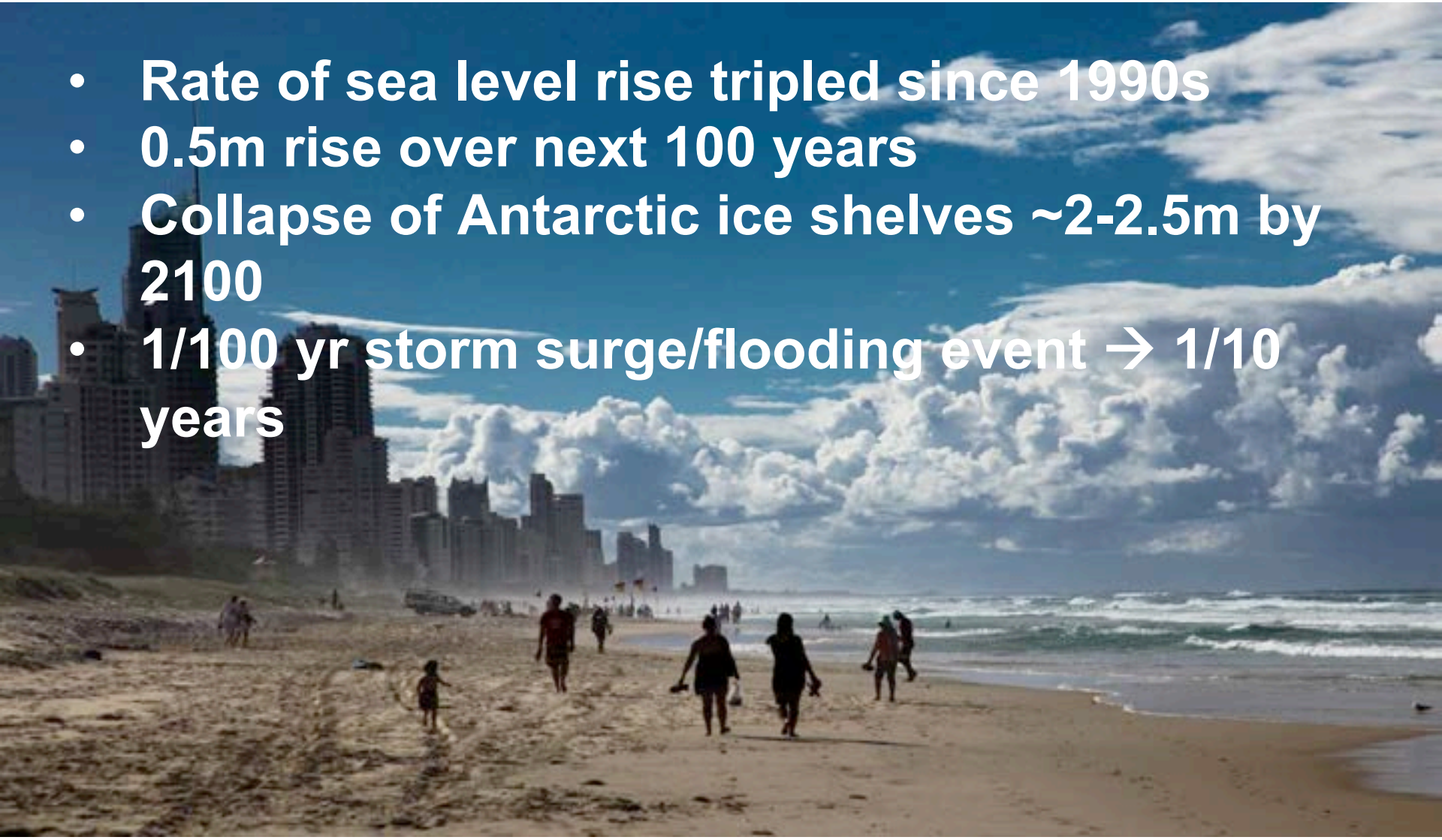


COASTAL FLOODING

CLIMATE COUNCIL



COASTAL FLOODING

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CITIES

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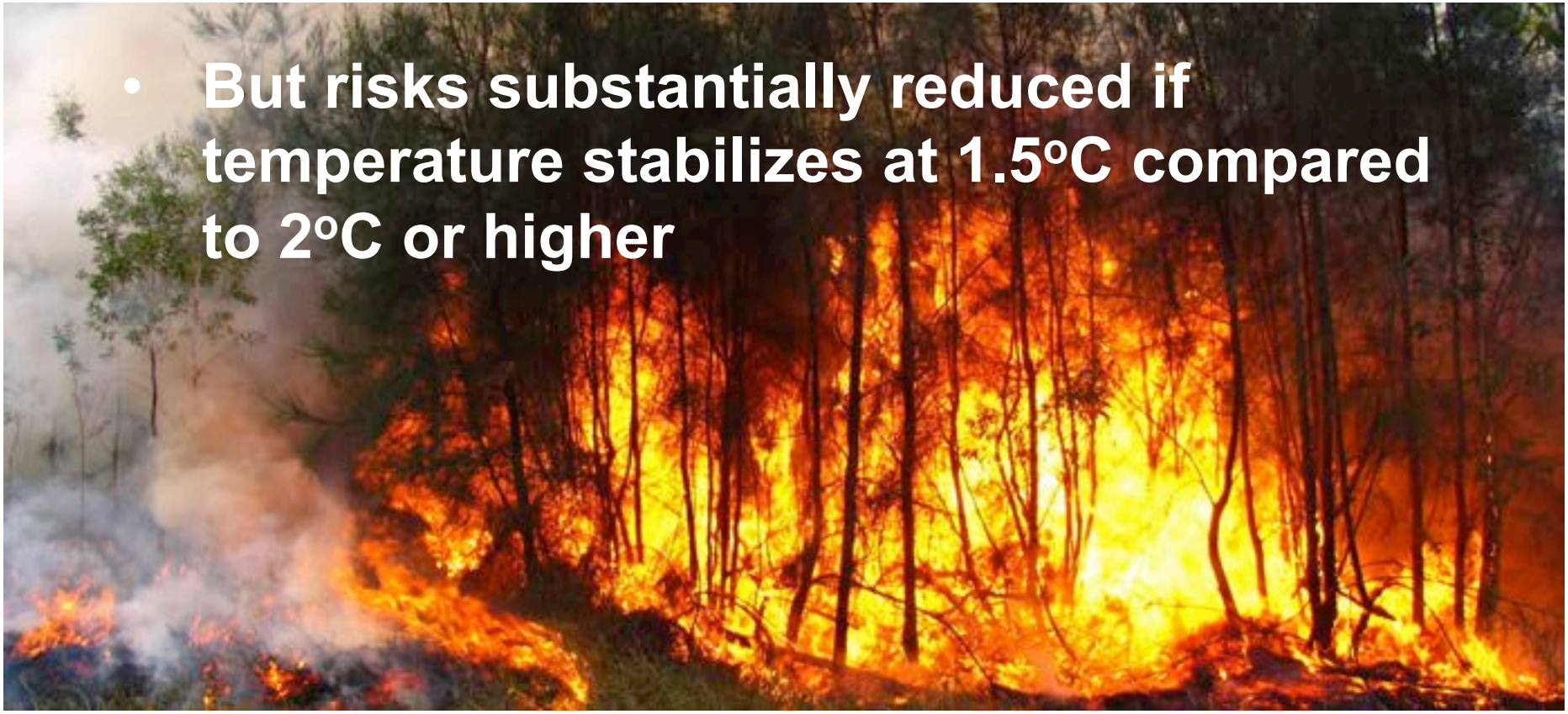
AUSTRALIA IS ONE OF THE MOST VULNERABLE DEVELOPED COUNTRIES IN THE WORLD TO THE IMPACTS OF CLIMATE CHANGE



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THE DIFFERENCE BETWEEN 1.5 AND 2°C WARMING

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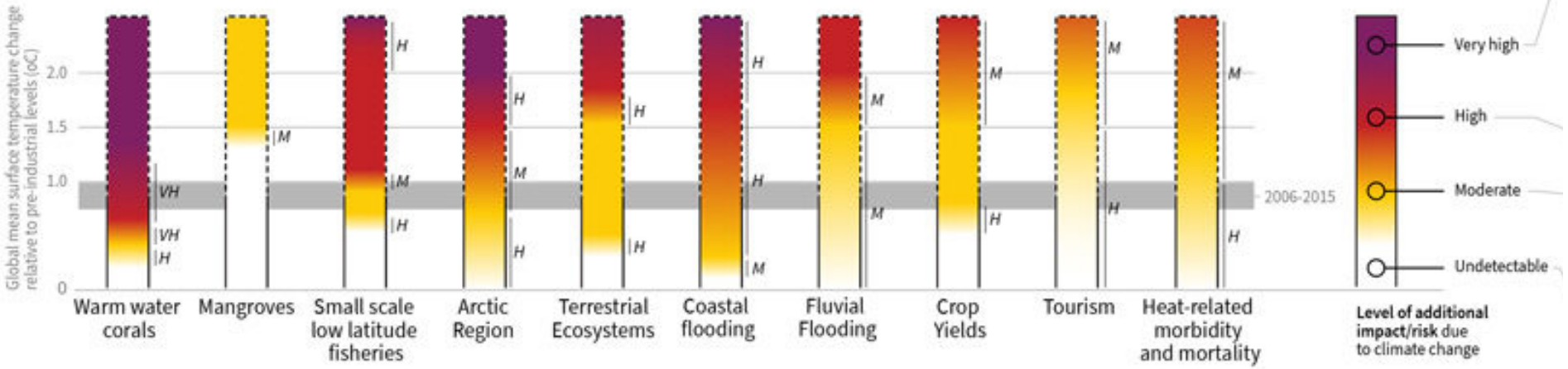
Impacts and risks for selected natural, managed and human systems



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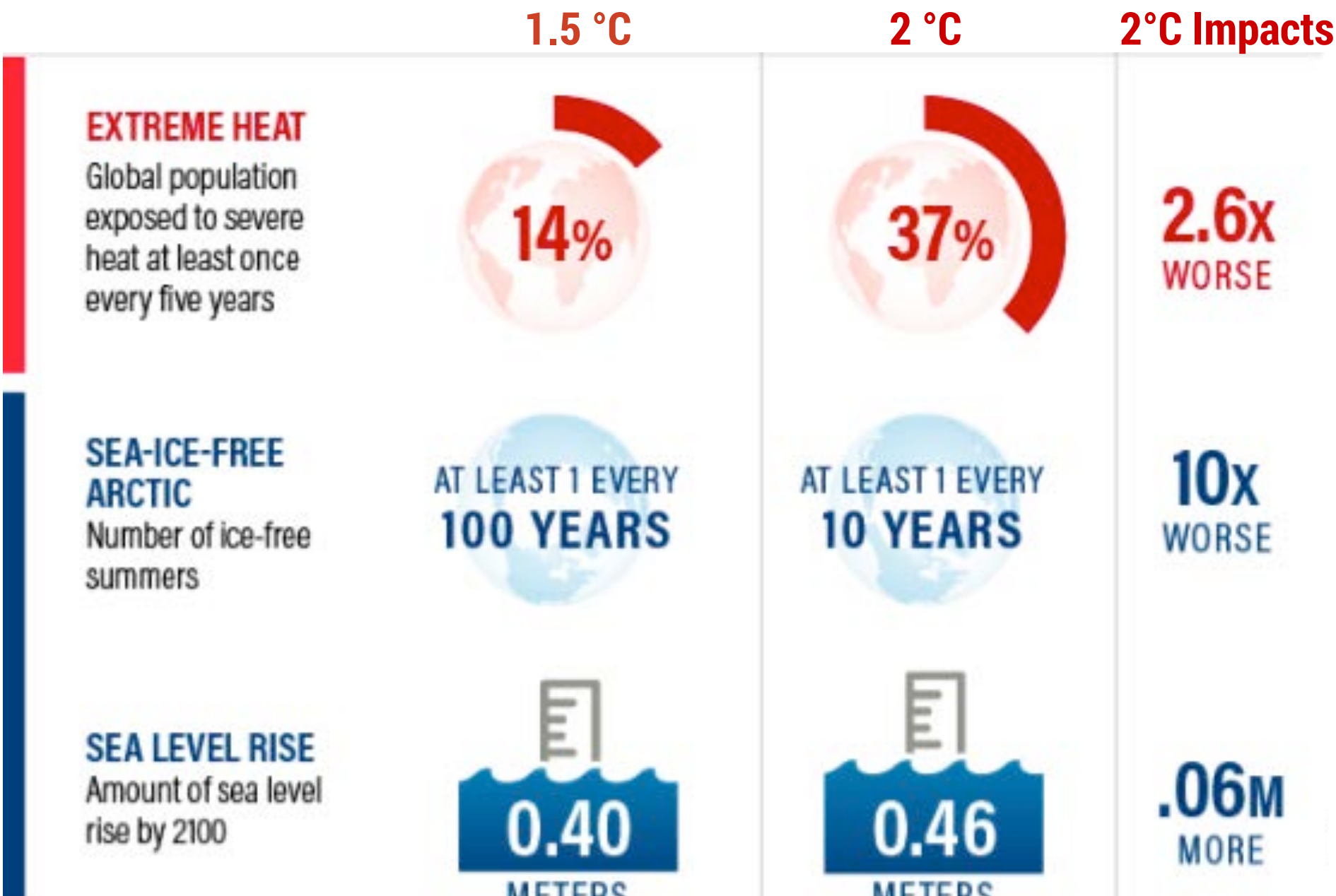
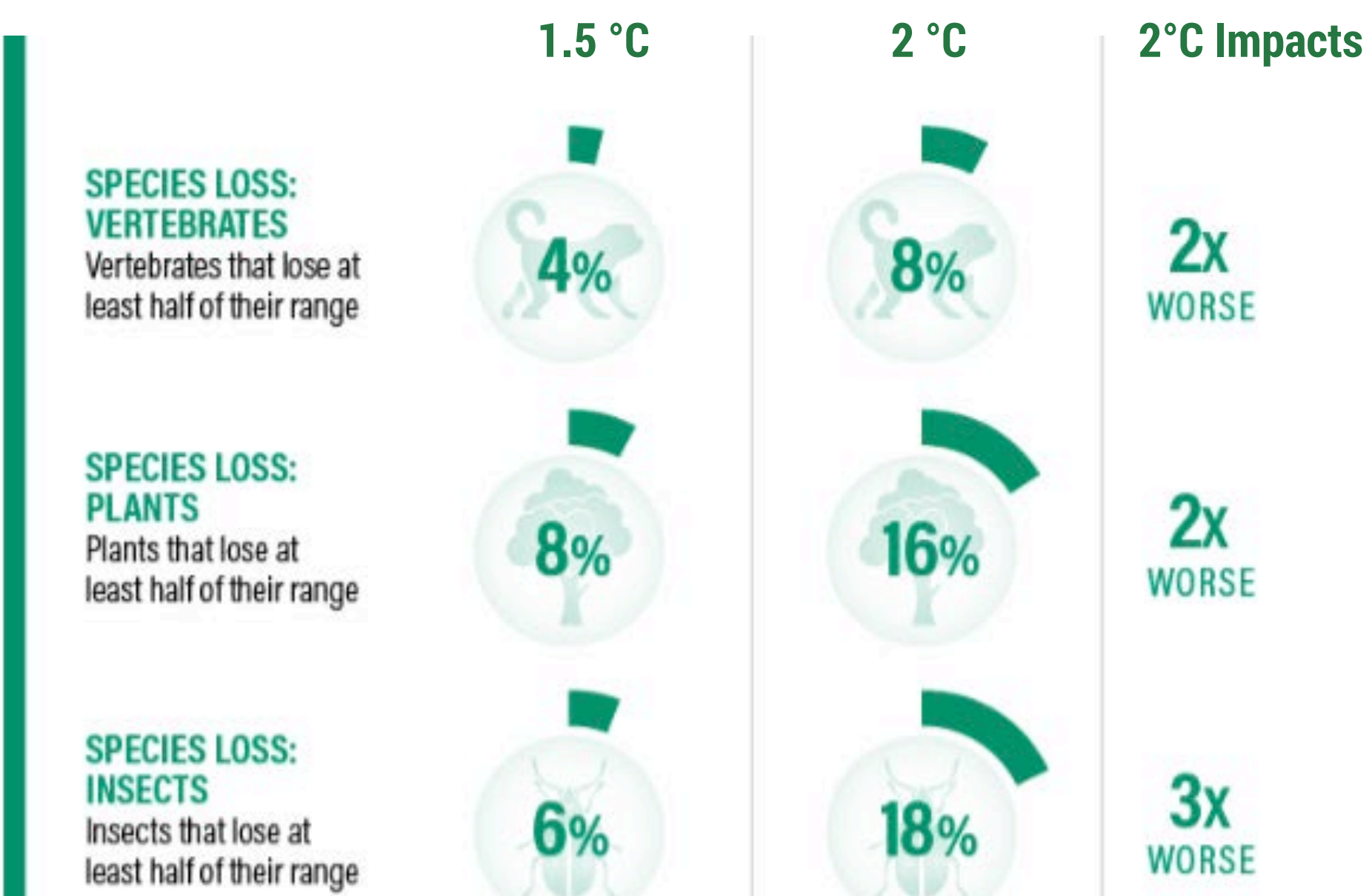
DIRECT IMPACTS



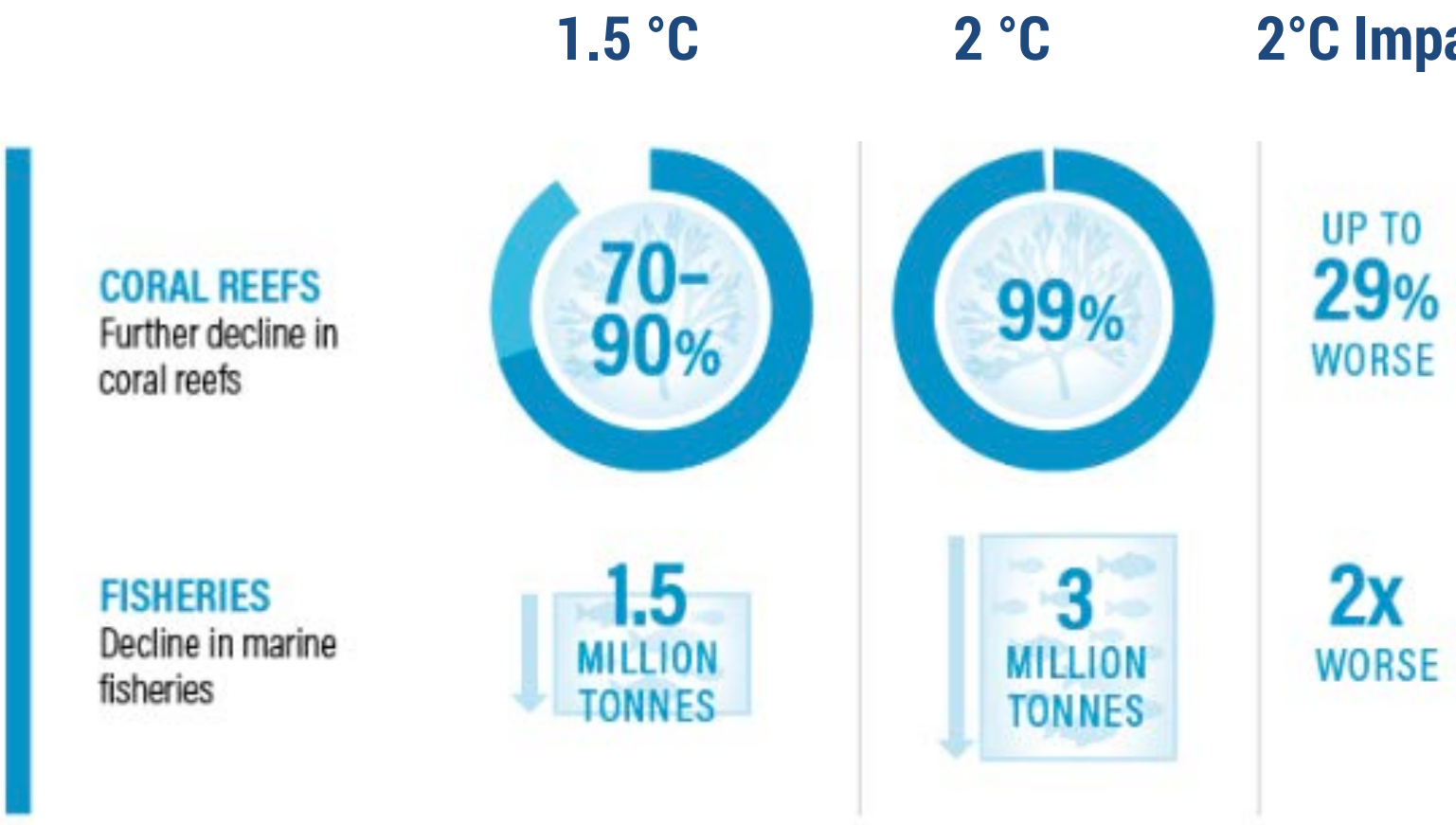
SPECIES


1.5 °C
2 °C
2°C Impacts
SPECIES LOSS: VERTEBRATES
Vertebrates that lose at least half of their range
4%
8%
2x WORSE
SPECIES LOSS: PLANTS
Plants that lose at least half of their range
8%
16%
2x WORSE
SPECIES LOSS: INSECTS
Insects that lose at least half of their range
6%
18%
3x WORSE

LAND

	1.5 °C	2 °C	2°C Impacts
ECOSYSTEMS Amount of Earth's land area where ecosystems will shift to a new biome	7%	13%	1.86x WORSE
PERMAFROST Amount of Arctic permafrost that will thaw	4.8 MILLION KM²	6.6 MILLION KM²	38% WORSE
CROP YIELDS Reduction in maize harvests in tropics	3%	7%	2.3x WORSE

OCEANS



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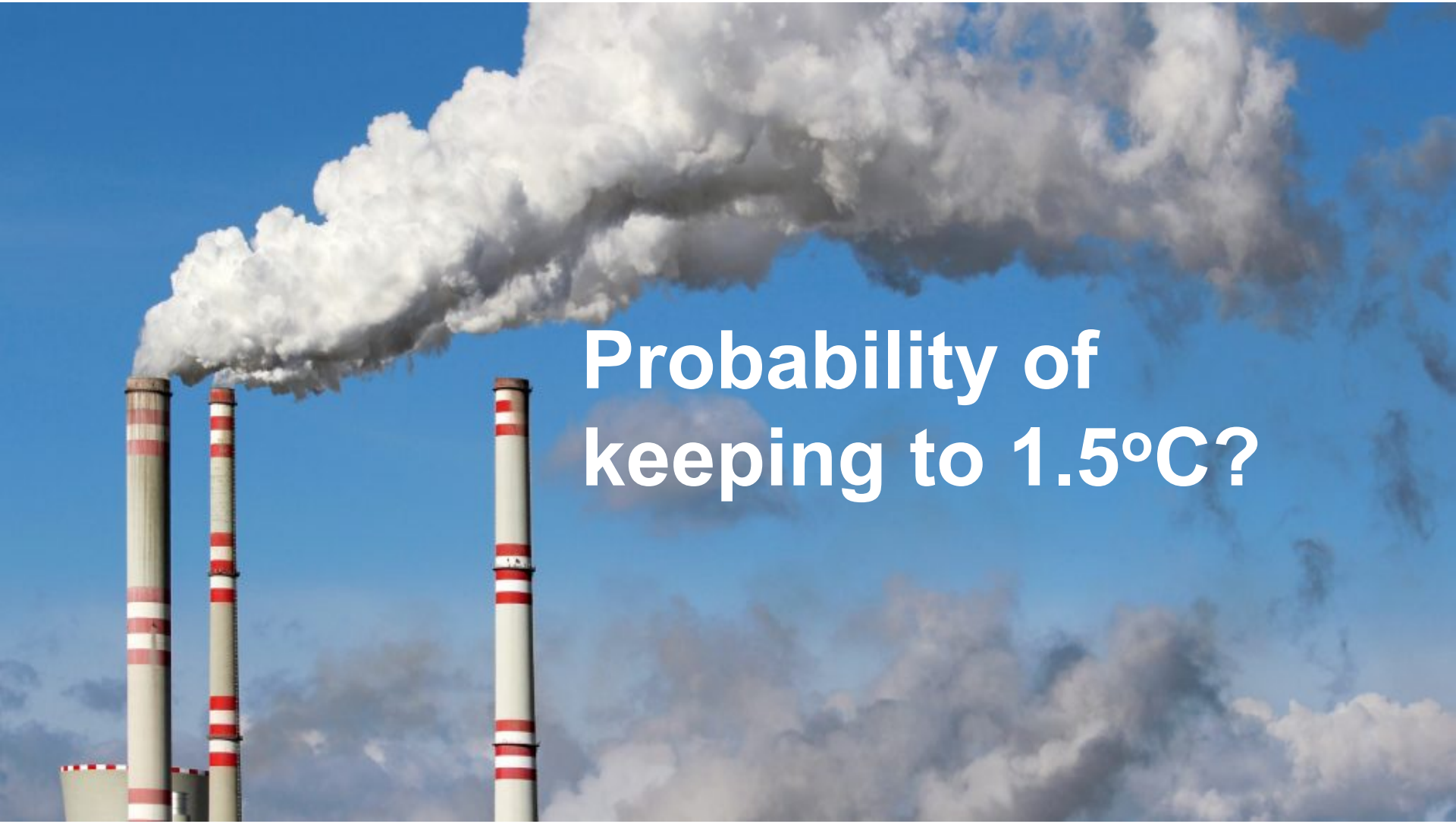

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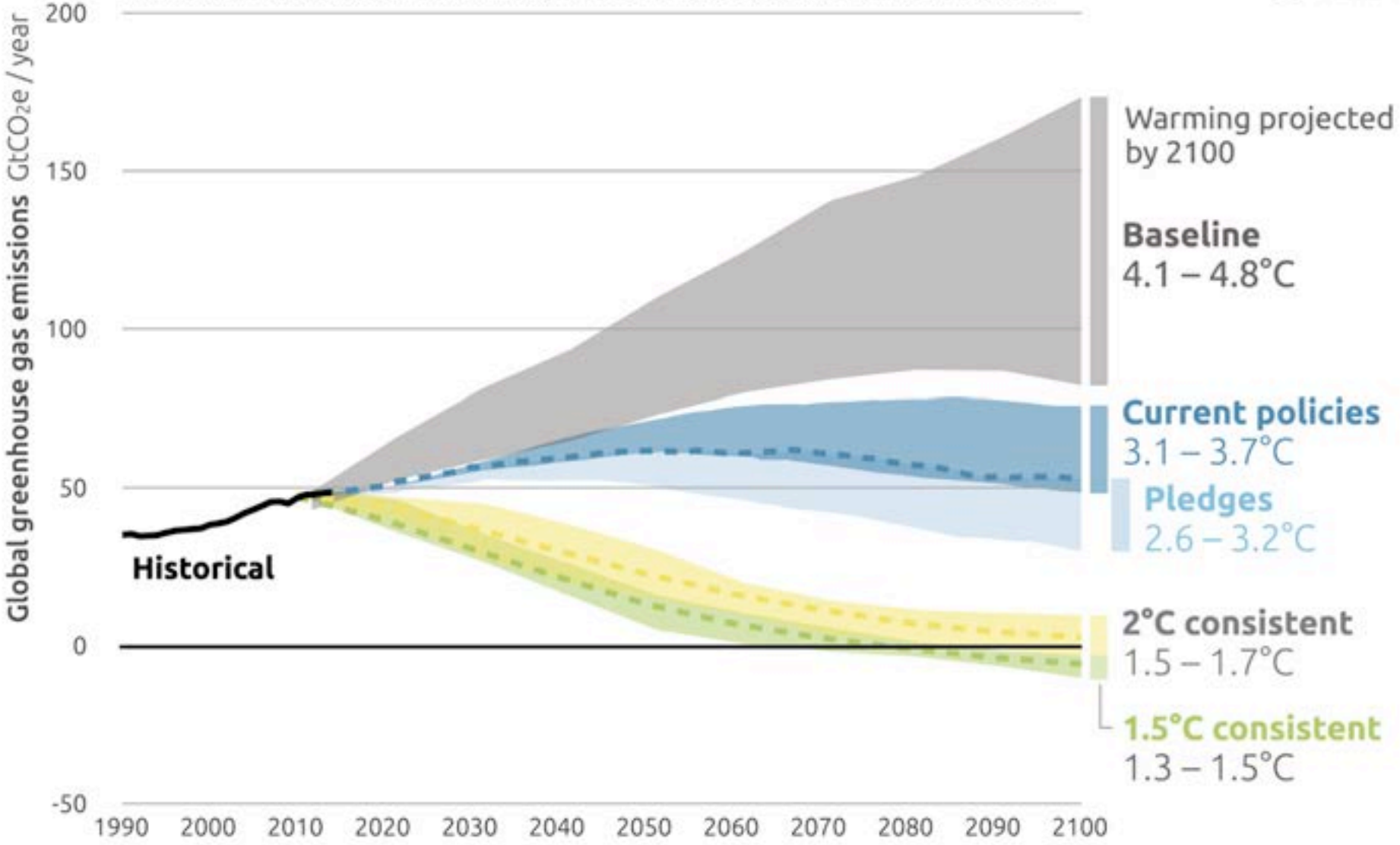
2100 WARMING PROJECTIONS

Emissions and expected warming based on pledges and current policies

Climate Action Tracker



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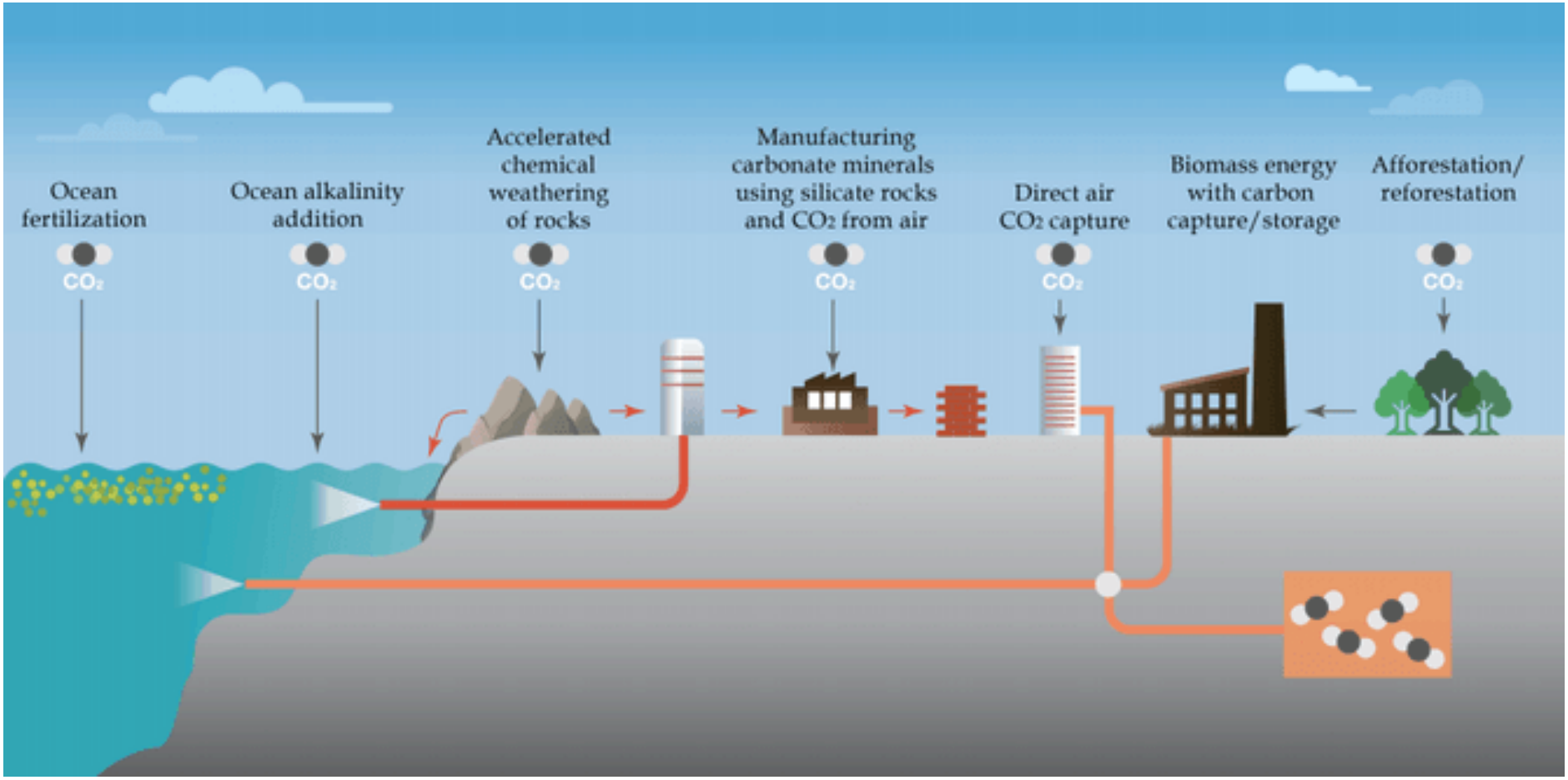
PATHWAYS TO I.5^{O}C

- Require far-reaching and historically unprecedented transformations of energy, land, urban, and industrial systems in the next 20 years
- All achieve net zero CO_2 emissions by mid-century
- All rapidly reduce short-lived climate pollutants (SLCPs), especially methane and black carbon
- Annual investment in energy system needed ~USD $2.4 trillion
- Almost all achieve net negative emissions by end of century
- All rely on CO_2 removal (CDR) technology such as…..

NEGATIVE EMISSIONS TECHNOLOGIES



Oxford University

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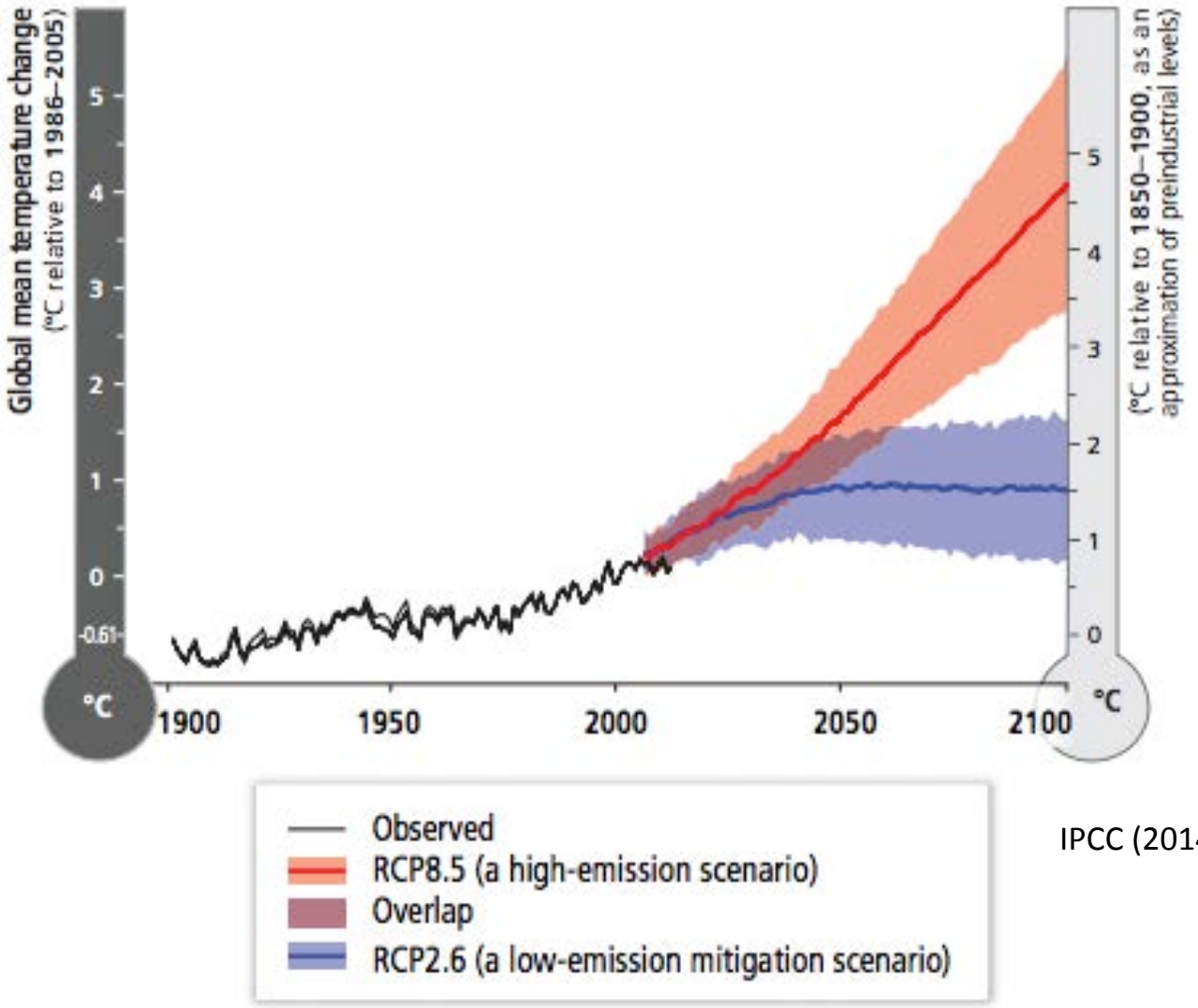
WHAT WE DO NOW MATTERS



IPCC (2014)

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Meanwhile, back home….

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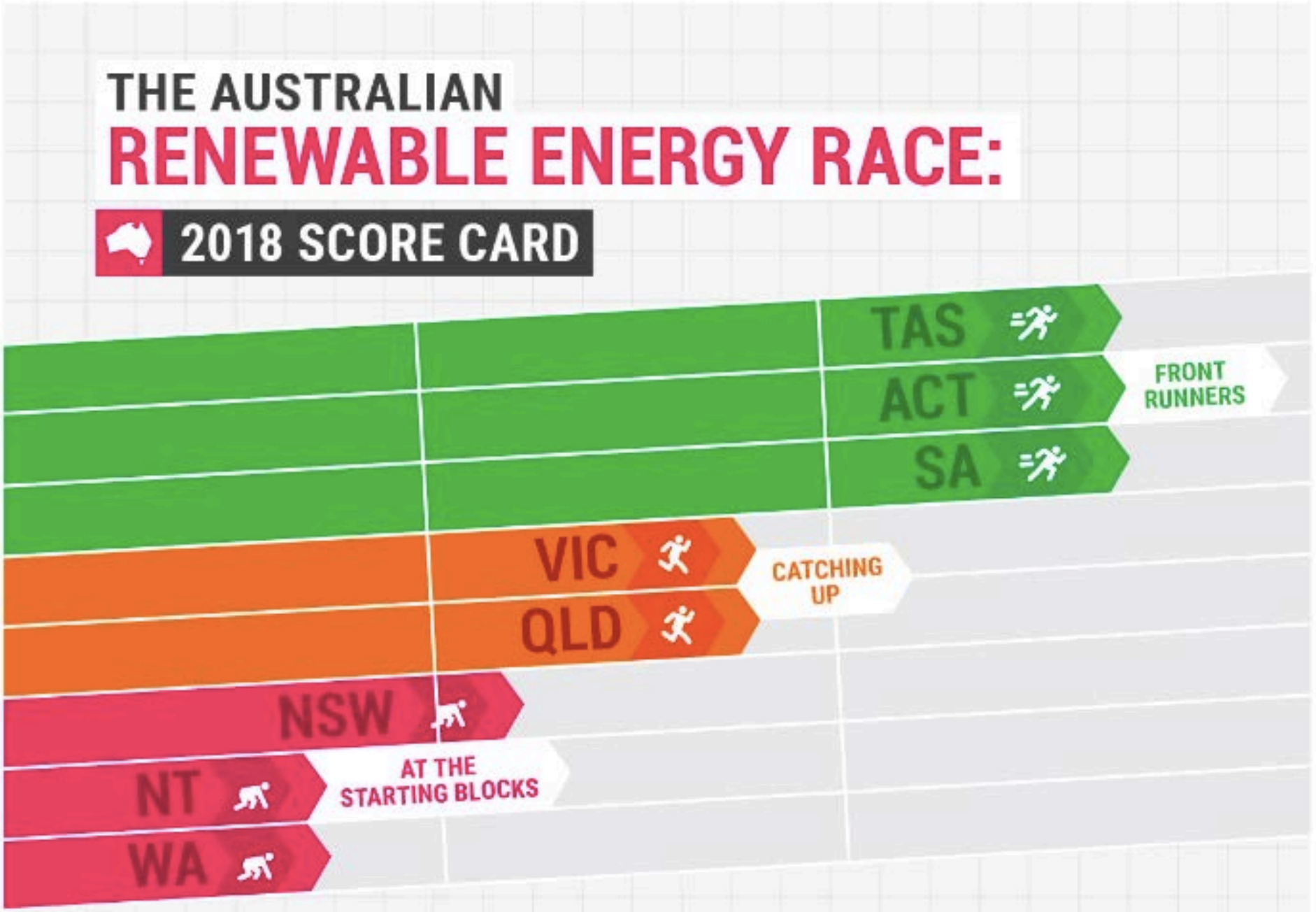

https://www.climatecouncil.org.au/resources/states-renewable-energy/

	% Renewable energy (2017)	Capacity per cap (kw/cap)	% solar households	Renewable energy targets	Net zero emissions targets	Highlights
TAS (A)	87.4	0.7	14	100% by 2022	Net zero by 2050	Highest proportion of renewable electricity. Achieved net zero emissions.
ACT (A)	46.2	1.1	14	100% by 2020	Net zero by 2050	On track to meet renewable energy target.
SA (A)	43.4	1.1	32	-	Net zero by 2050	On track for 73% renewables by 2020.
VIC (B)	13.6	0.3	16	25% by 2020 40% by 2025	Net zero by 2050	Completed Australia's largest renewable energy reverse auction.
QLD (B)	7.1	0.1	33	50% by 2030	Net zero by 2050	Highest proportion of solar households. Largest number of projects under construction.
NSW (C)	12.6	0.2	18	-	Net zero by 2050	Strong pipeline of renewable energy projects with planning approval.
NT (C)	3.0	0.1	14	50% by 2030	-	50% renewable energy target by 2030.
WA (C)	7.5	0.2	27	-	-	Only state with no renewable energy target or net zero emissions target.

TAS: 100%

ACT: 100% by 2020

SA: 50% by 2025

QLD: 50% by 2030

NT: 50% by 2030

VIC: 40% by 2025

NSW and WA: no hard targets.

STATE TARGETS

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SO WHERE ARE WE AT?

On the plus side:

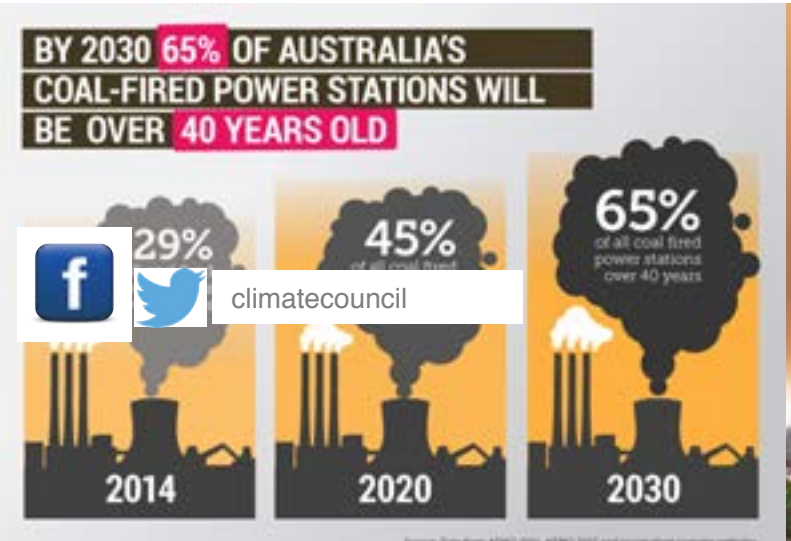
- We have unprecedented opportunities to build a strong, sustainable economy powered by clean energy
- Cities and regional centres have a critical role to play
- Decisions made in the next 2-3 years will determine the health of our future

But to be realistic:

- We need to plan for a future of at least 2^{o}C and the impacts that come with this

The Climate Council

- 100 reports, many videos, shareable infographics
- > 200,000 facebook followers
- >180,000 engaged twitter followers
- 28,000 media items
- Potentially reach 8 million people per month



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