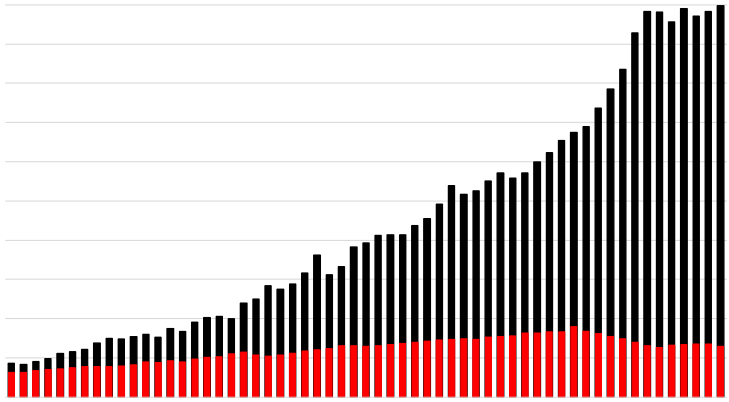
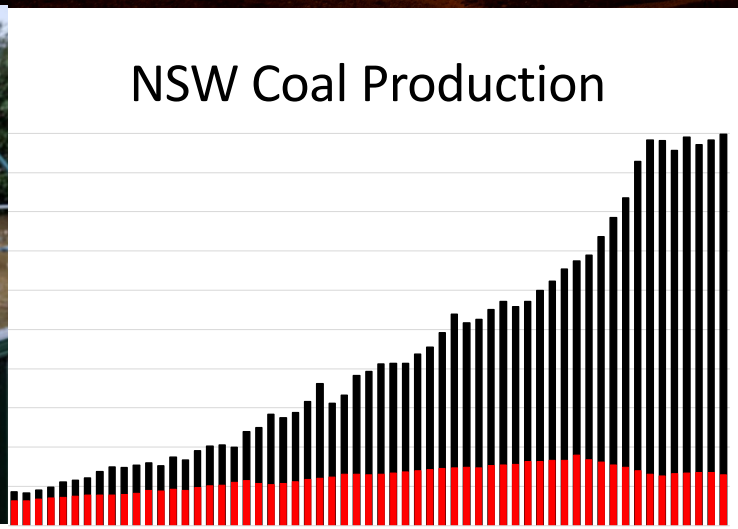
Mt Pleasant Optimisation Project:

Greenhouse Gas and Climate Implications



Professor Penny D Sackett
ANU Institute for Climate, Energy and Disaster Solutions
Presented to NSW Independent Planning Commission
8 July 2022



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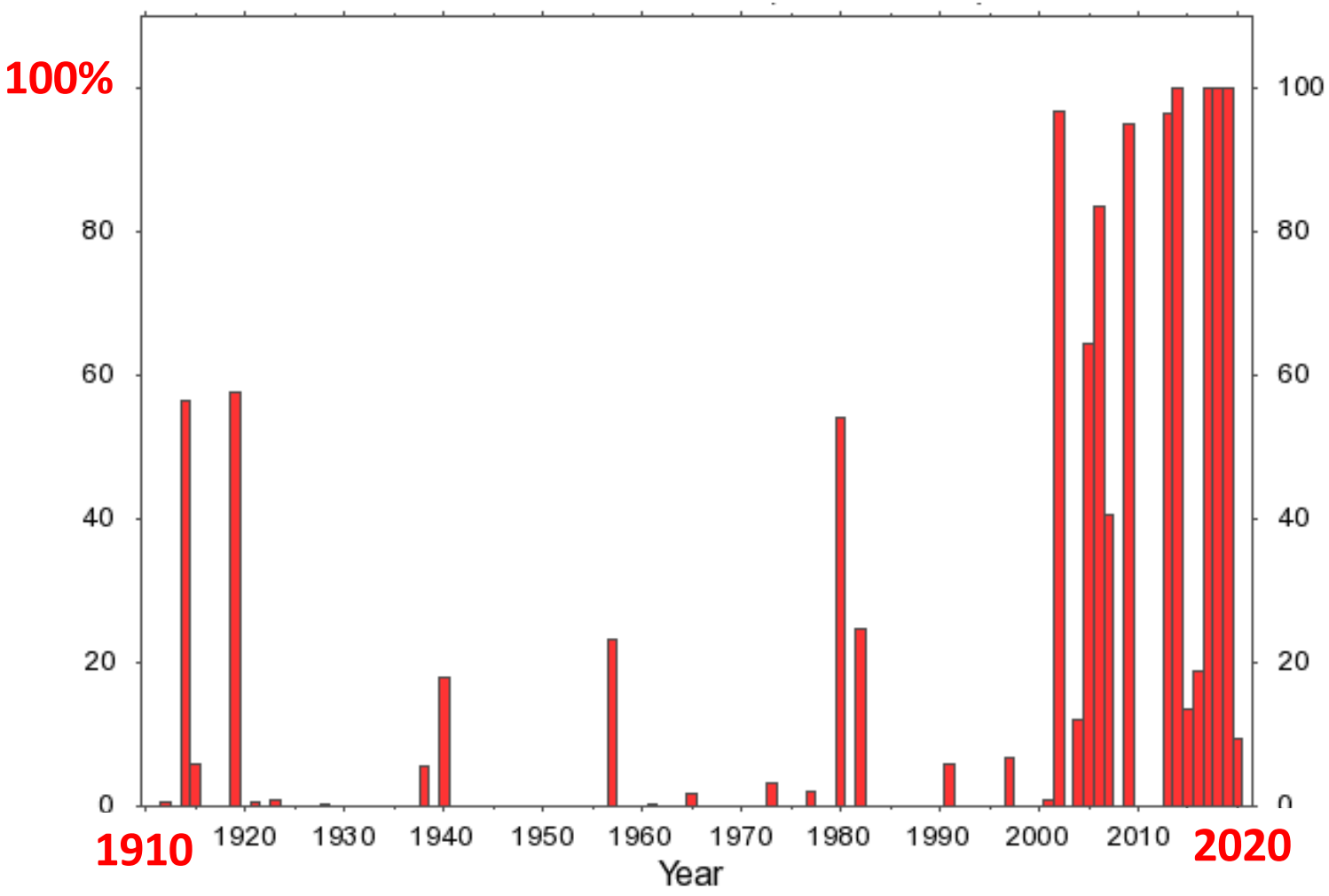
My written report will contain details about

- Points covered in this presentation, and
- Why the effects of methane emissions from this Project are underestimated
- Why the Project will make Australia's and NSW's emissions targets more difficult to meet
- Why the social cost of Project greenhouse gas emissions have been drastically underestimated by factors 500 to 1150, compared to the scientific literature.

Fraction of NSW area that experienced maximum annual temperature in top 10% of all records since 1910



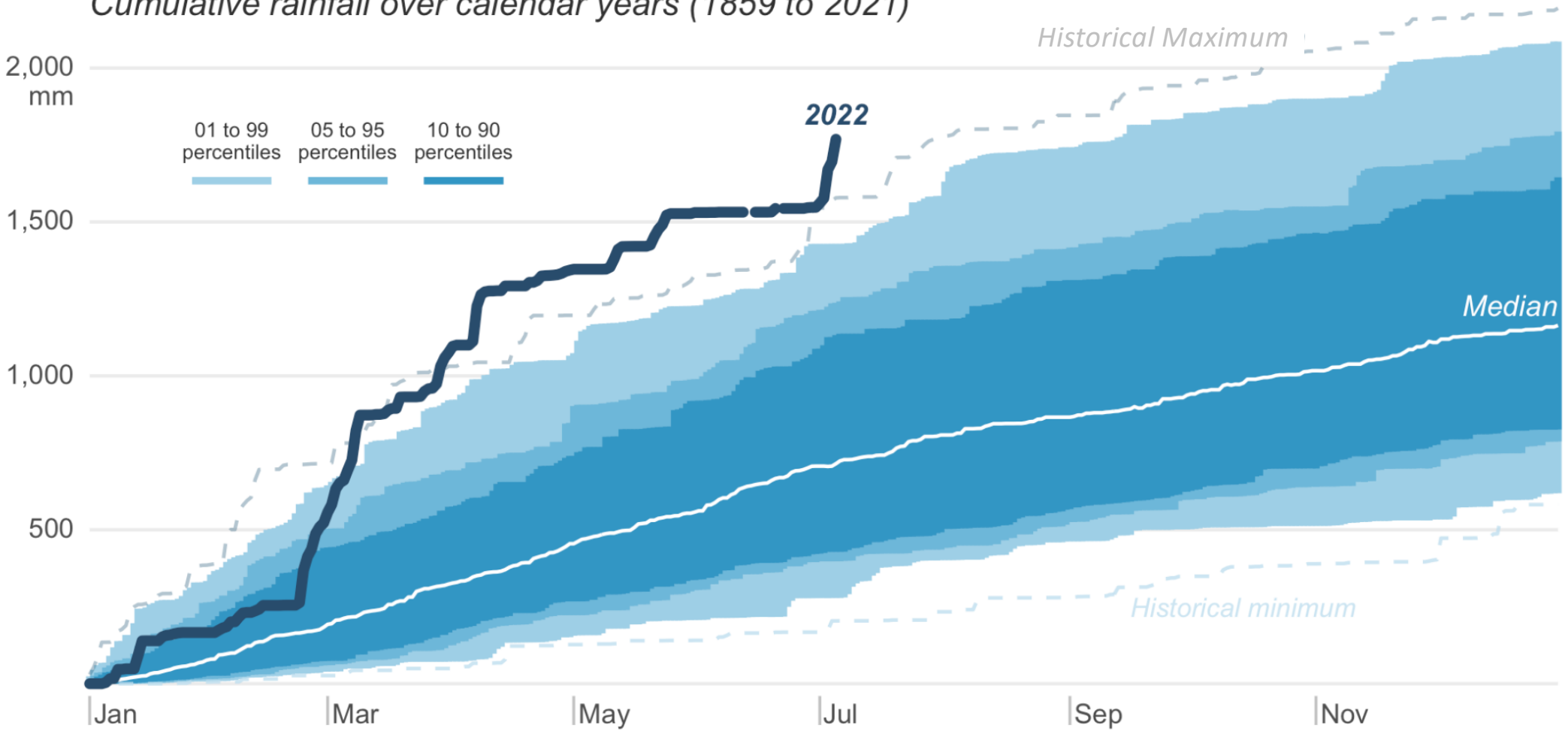
Climate Change has arrived.

It will get worse.

How much worse depends on decisions we make this decade, this year, today.

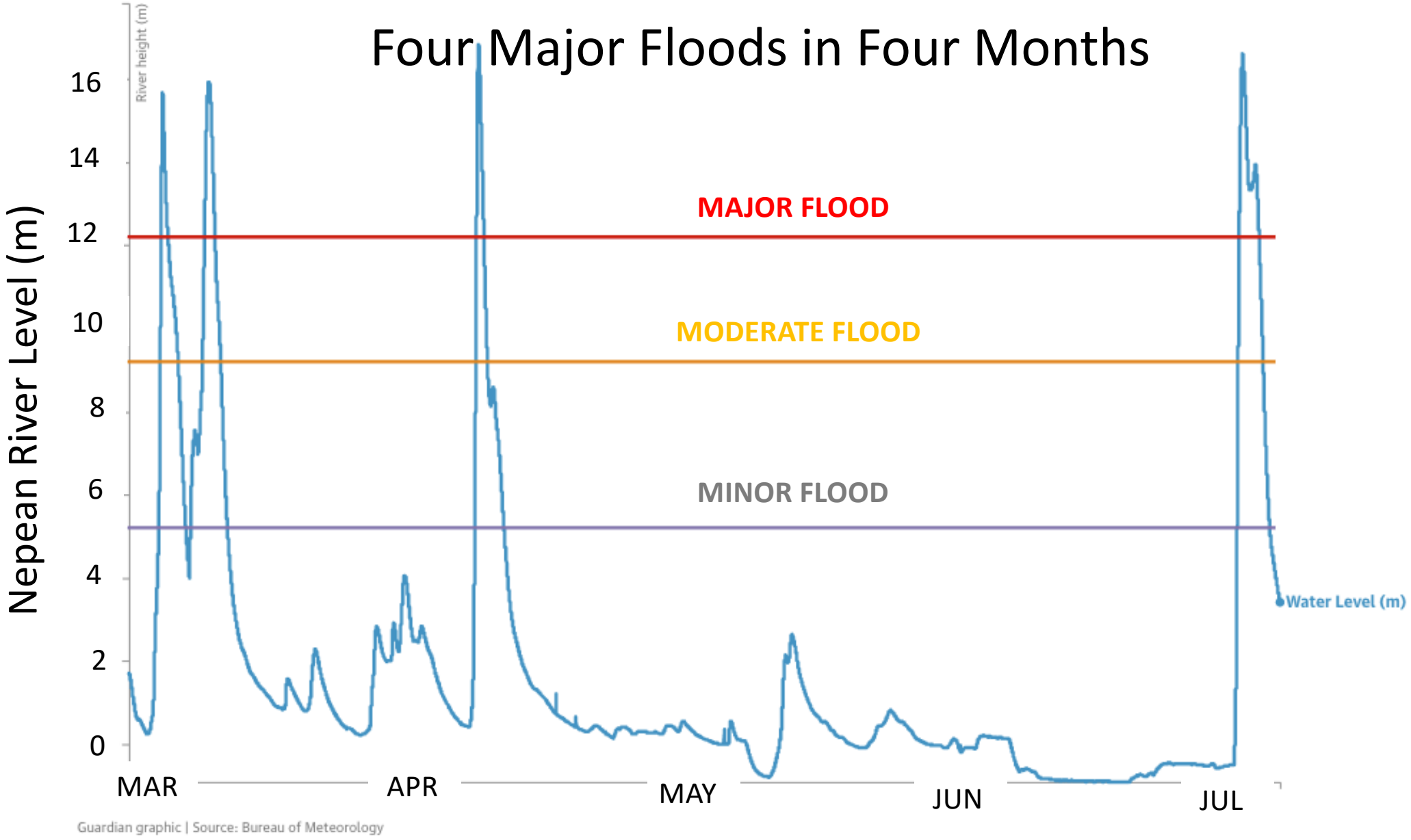
Sydney Rainfall

Cumulative rainfall over calendar years (1859 to 2021)



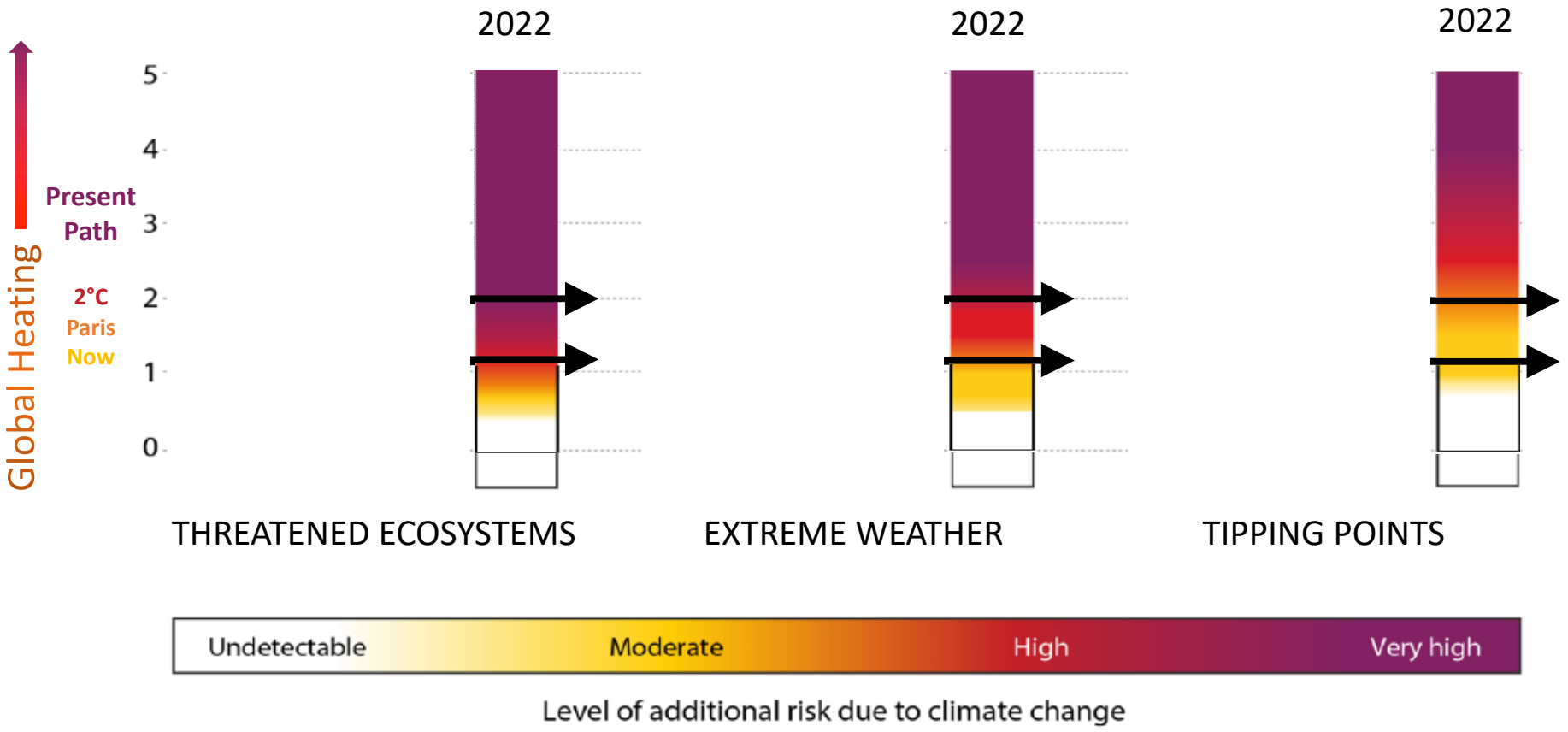
As of 5 July 2022

Four Major Floods in Four Months



The more we know, the more we realise . . .

how dangerous even a small amount of warming can be.



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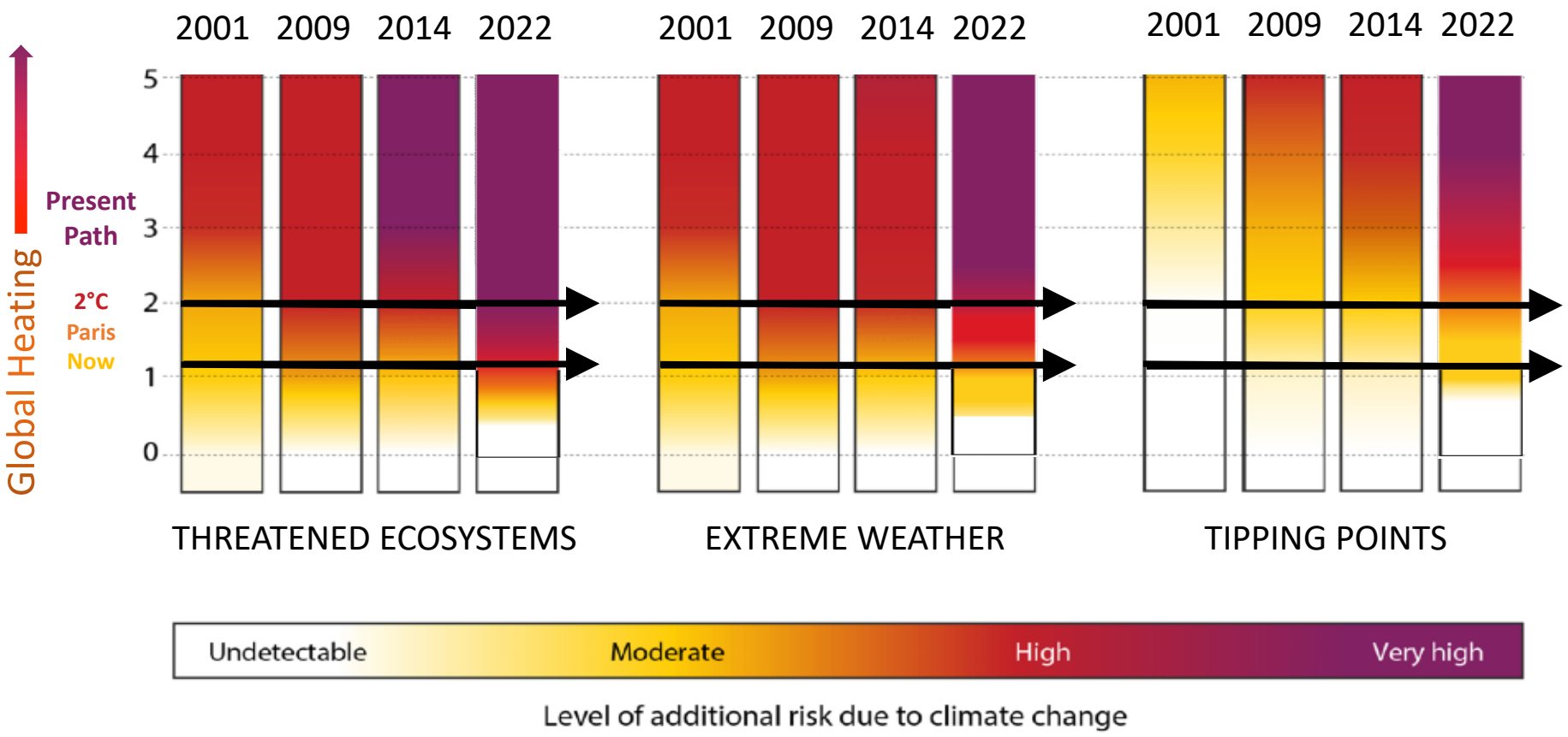
Risk estimates at different warming levels from IPCC reports over time



https://www.ipcc.ch/report/ar6/wg1/#SPM

IPCC AR6 WG1

Irreversible Changes are Happening Now

In many cases, even with possible future direct carbon capture from the atmosphere

- **Ocean** temperature, acidification and deoxygenation: irreversible for **100s to 1000s years**.
- Mountain and polar **glaciers** melt: irreversible for **10s to 100s years**.
- Release of **permafrost carbon:** irreversible for **100s of years**.
- **Continued sea-level rise**: irreversible for **100s to 1000s of years**.

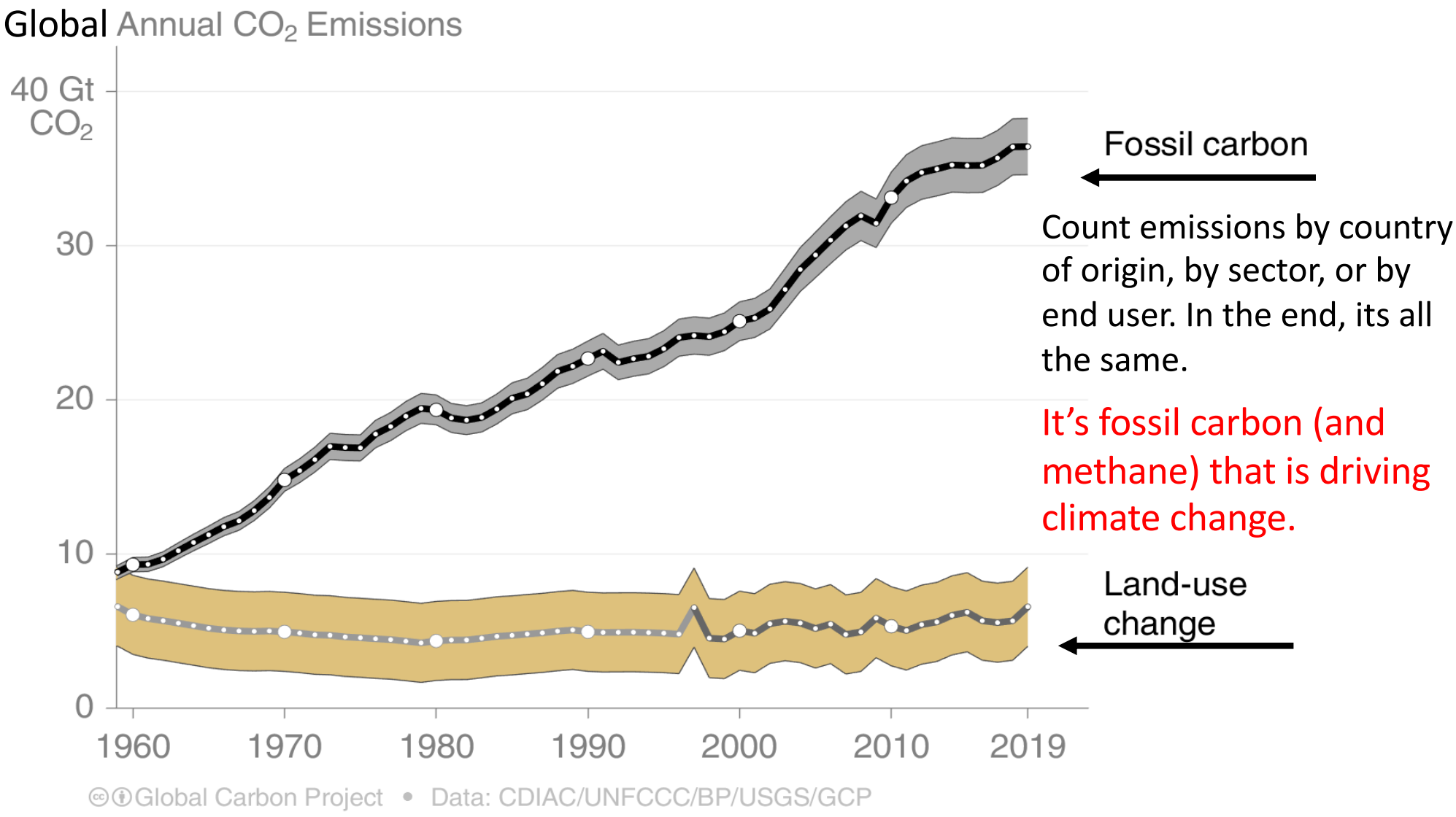
Small rise in global temperature: Huge consequences

1.2°C: (now) Record Drought, Black Summer Fires, Record Floods in NSW
47% of local extinctions in world caused by climate change.

1.5°C: (virtually inevitable by ~2035) Once-in-30-year heatwaves happen every 3 years, NSW summer temps of 2019/20 = an `average summer.'

2.0°C: 50°C summer days in Sydney, 99% of all world's coral reefs gone,
Complete ecosystem transformation on 13% of Earth's surface.

3.0°C+: (where world – including Australian – inaction is taking us)
NSW runoff water reduced by 45 to 60% in many areas.
Most world ecosystems destroyed or heavily damaged.
Large areas of world uninhabitable. Entire global economy damaged.



Count emissions by country of origin, by sector, or by end user. In the end, its all the same.

It's fossil carbon (and methane) that is driving climate change.

But what about the Paris Agreement?

- **Nations** that **have committed to reducing emissions by 2030** have done so on average by only **7.5%** (on 2010 levels).
- But what is needed:
  - **30% reduction** by 2030 to limit warming to **2°C** and
  - **55% reduction** by 2030 to limit warming to **1.5°C**.
- Based on current policies as opposed to Paris Agreement pledges, warming could go as high as **3.6°C**.

International Energy Agency's Net Zero Roadmap: No new or extended coal mines from 2021

IEA 2021. Roadmap for the Global Energy Sector, https://www.iea.org/reports/net-zero-by-2050

Regardless of when net zero is reached, the world has a fixed carbon budget for limiting global heating.

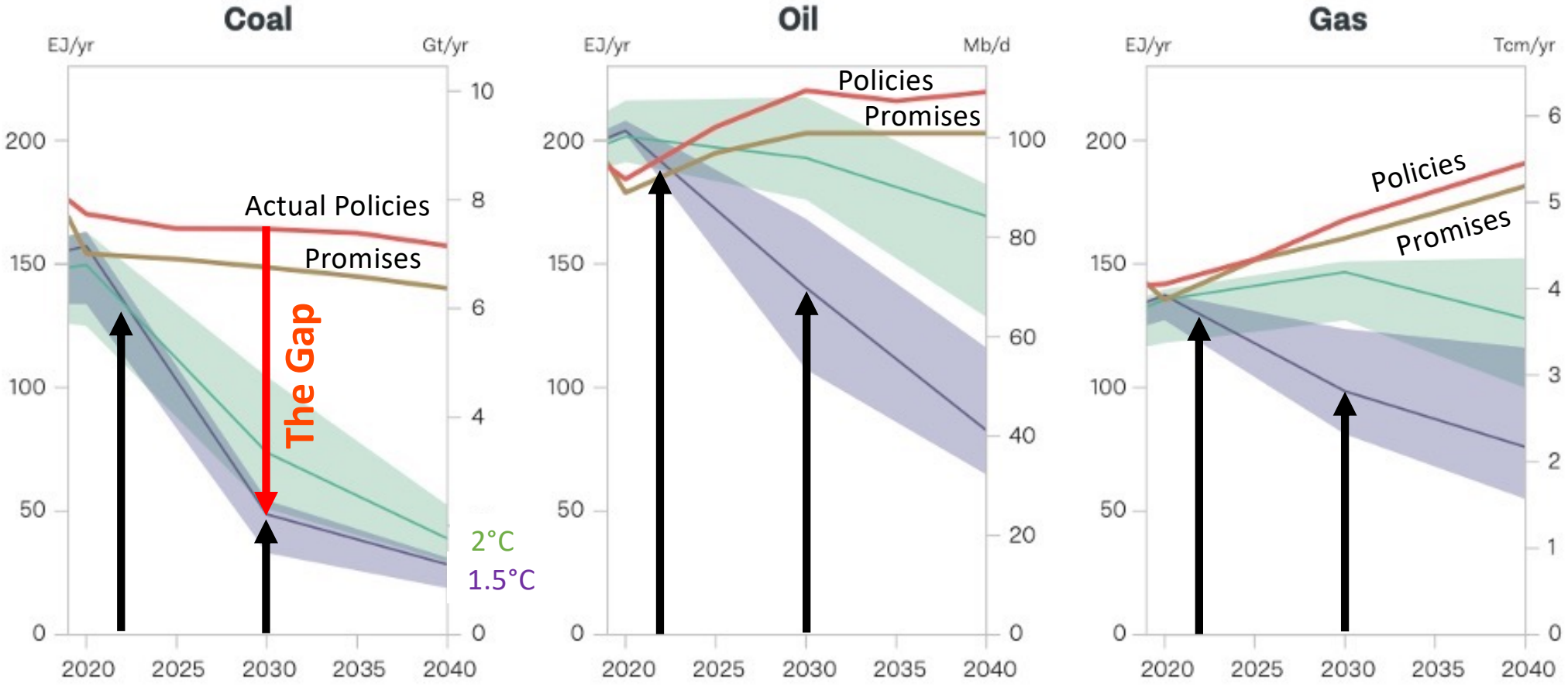
About 8 years remain at current emission levels before the remaining global carbon budget to hold warming to 1.5°C with at least a 67% chance is exhausted.

That's one reason why what we do between now and 2030 is so important.

The Fossil Fuel Gap

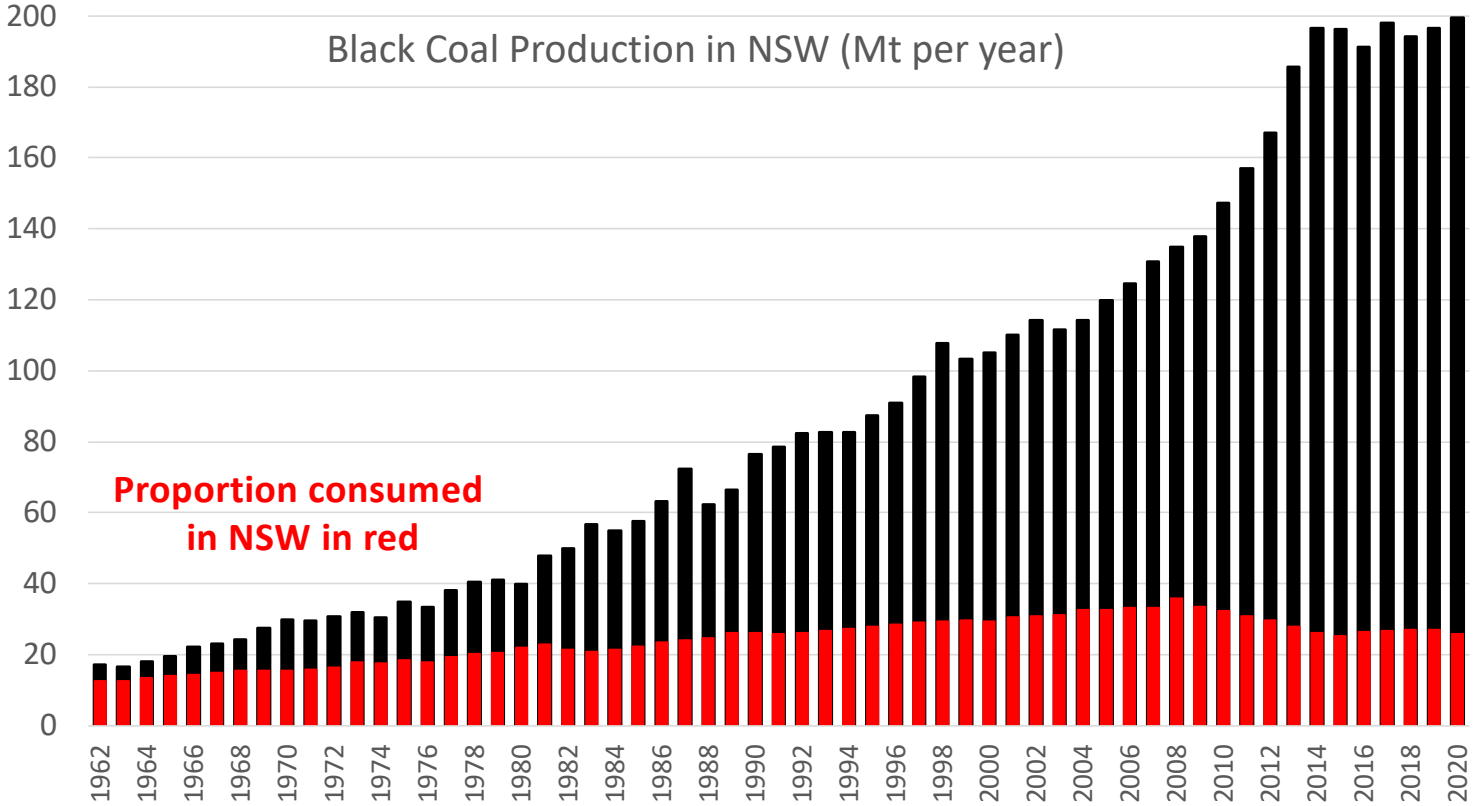
Joint 2021 Report from:
Stockholm Environment Institute, International Institute for Sustainable Development, ODI, E3G, and UN Environment Programme
https://productiongap.org/2021report

50% Chance of Holding Global Warming to 1.5°C
66% Chance of Holding Global Warming to 2°C



Data from Australia Energy Statistics 2021

This trend must reverse starting now in order to be consistent with a future of 1.5°C to 2.0°C global warming

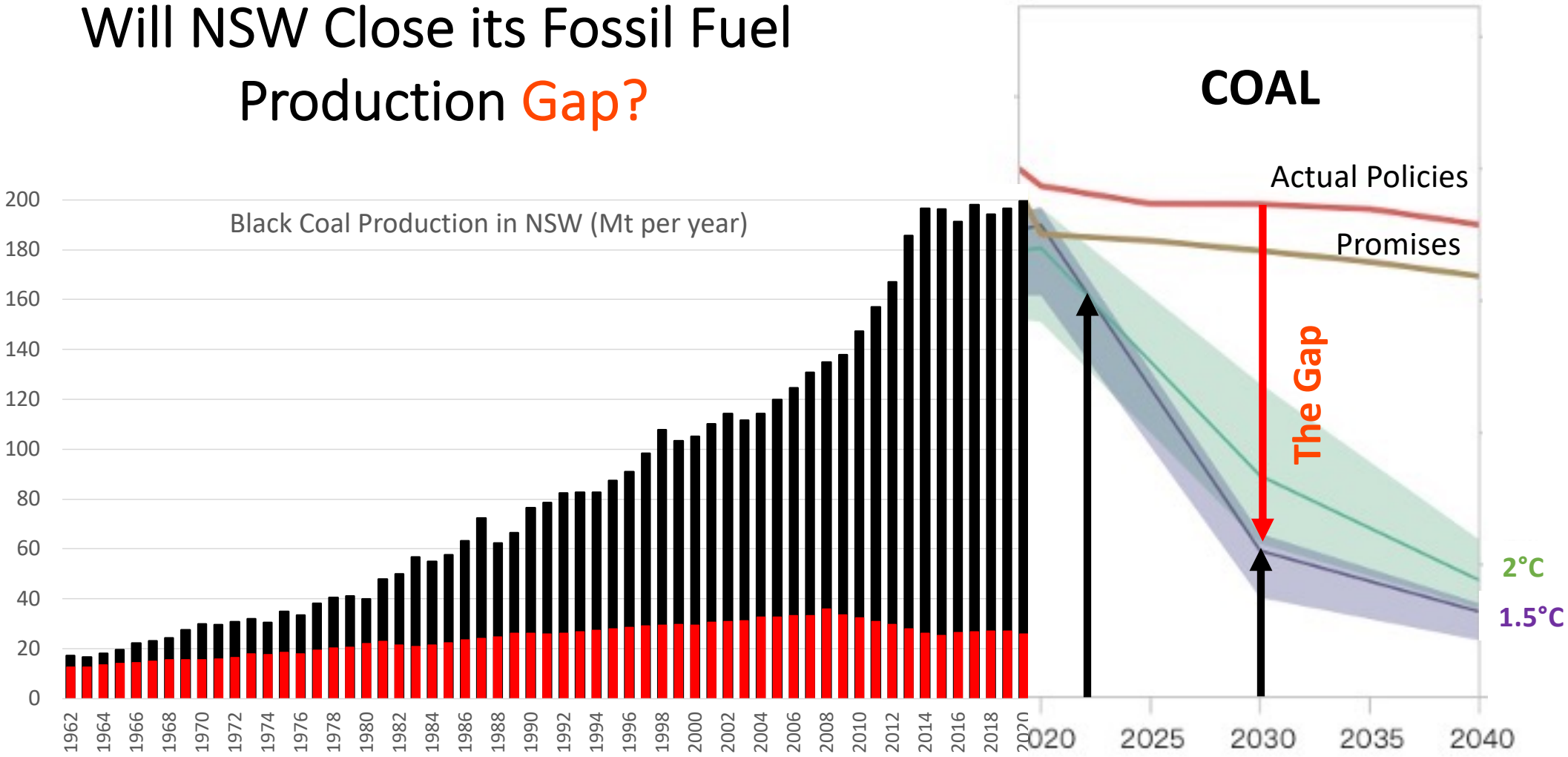


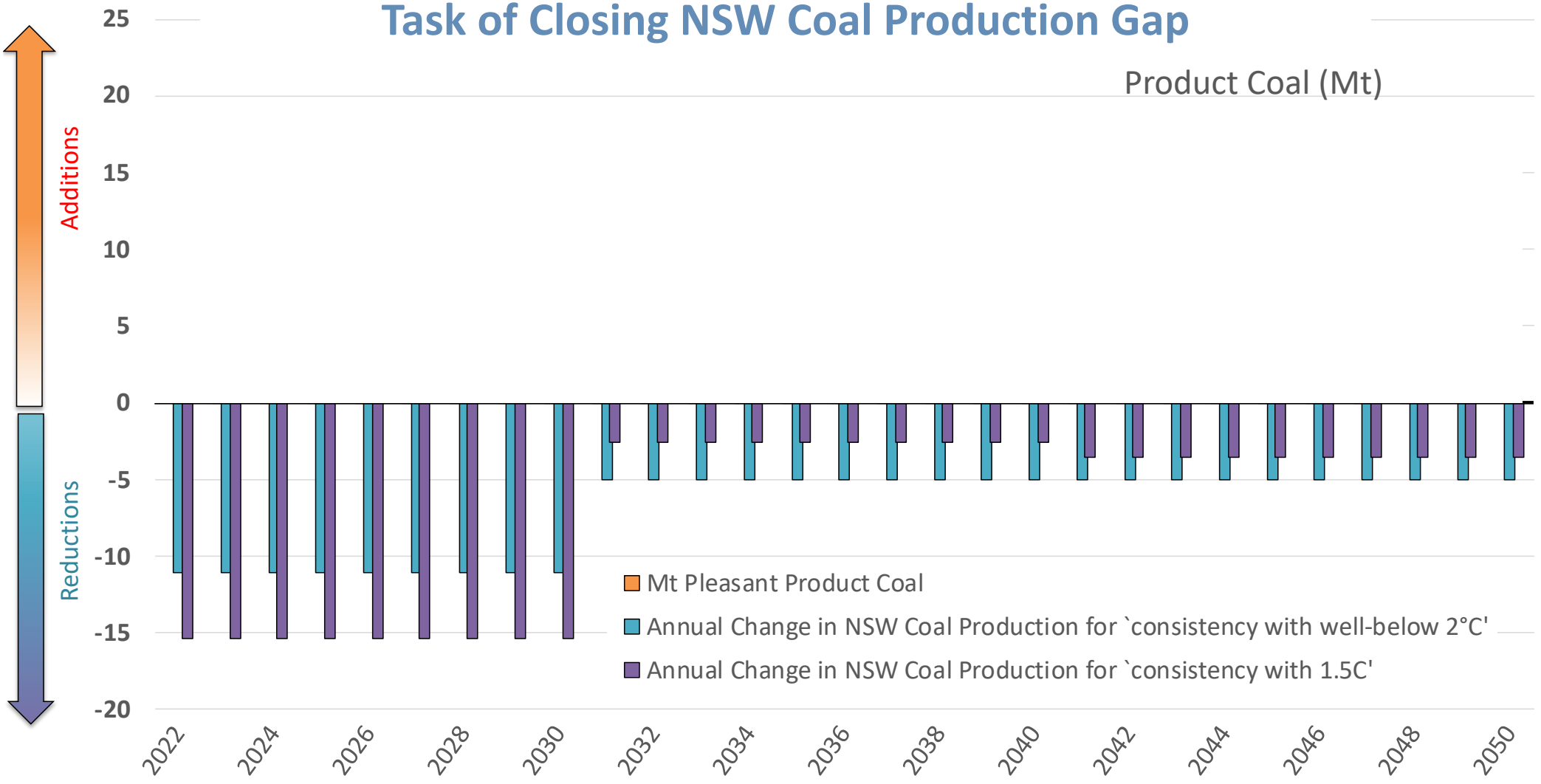
GHG emissions from the combustion of NSW coal (Scope 3)

is 3 times more damaging to the NSW environment

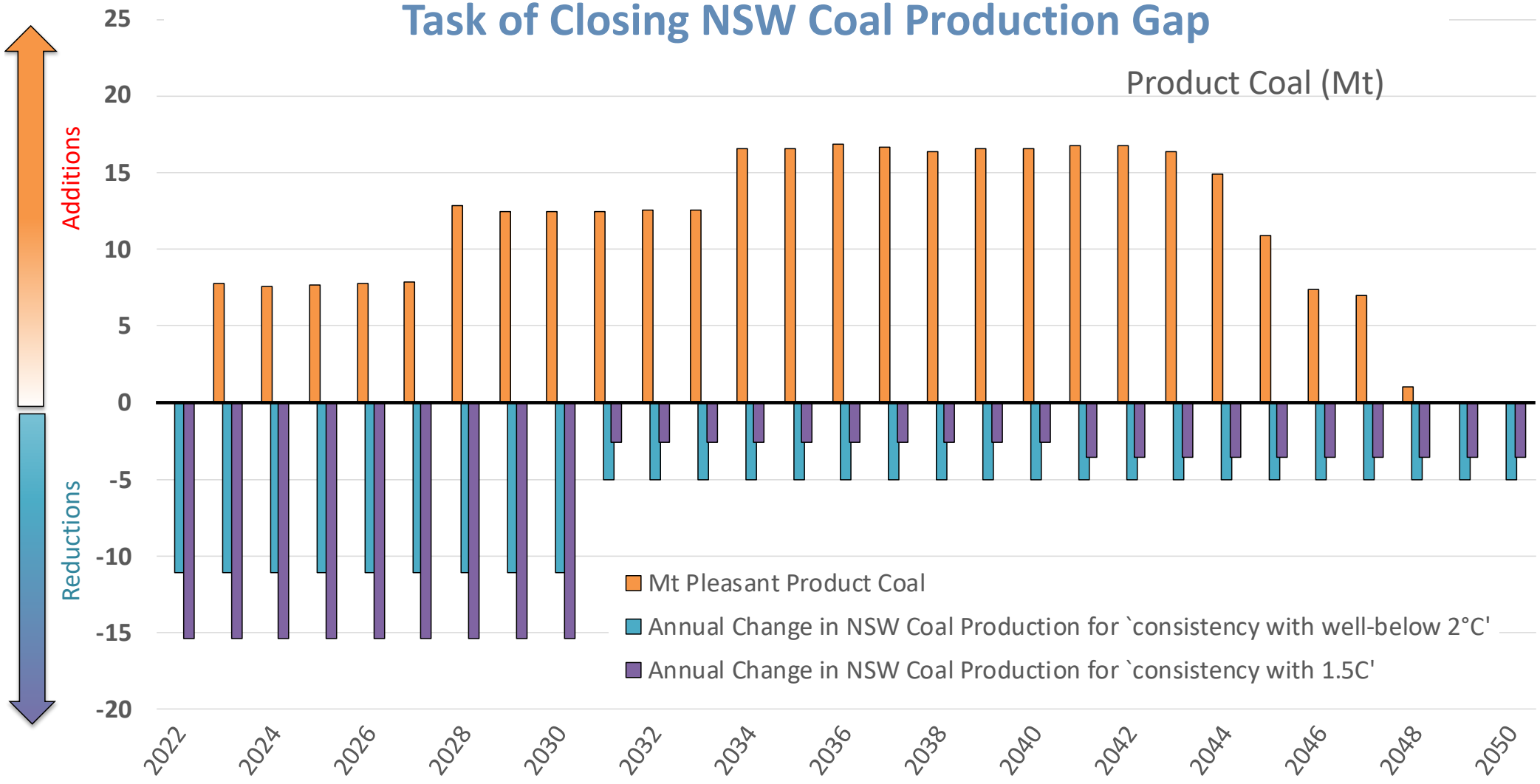
than all of the State's direct emissions (Scope 1) combined

Will NSW Close its Fossil Fuel Production Gap?



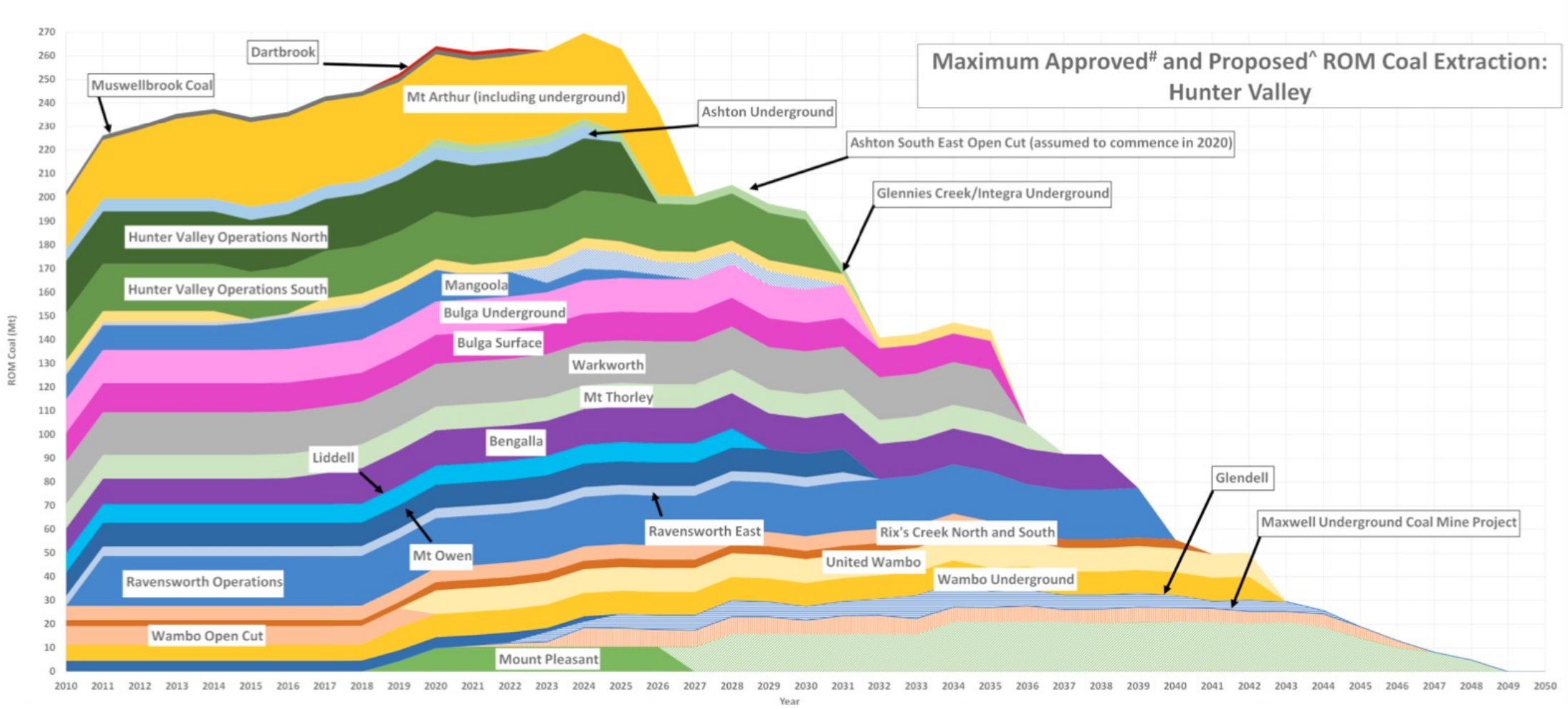

Task of Closing NSW Coal Production Gap
Product Coal (Mt)
Additions
Reductions
25
20
15
10
5
0
-5
-10
-15
-20
2022
2024
2026
2028
2030
2032
2034
2036
2038
2040
2042
2044
2046
2048
2050
Mt Pleasant Product Coal
Annual Change in NSW Coal Production for `consistency with well-below 2°C'
Annual Change in NSW Coal Production for `consistency with 1.5C'

Mt Pleasant Optimisation Project Coal Production compared to Task of Closing NSW Coal Production Gap



Approved and Proposed ROM Hunter Valley Coal Extraction

From Project EIS, Appendix S



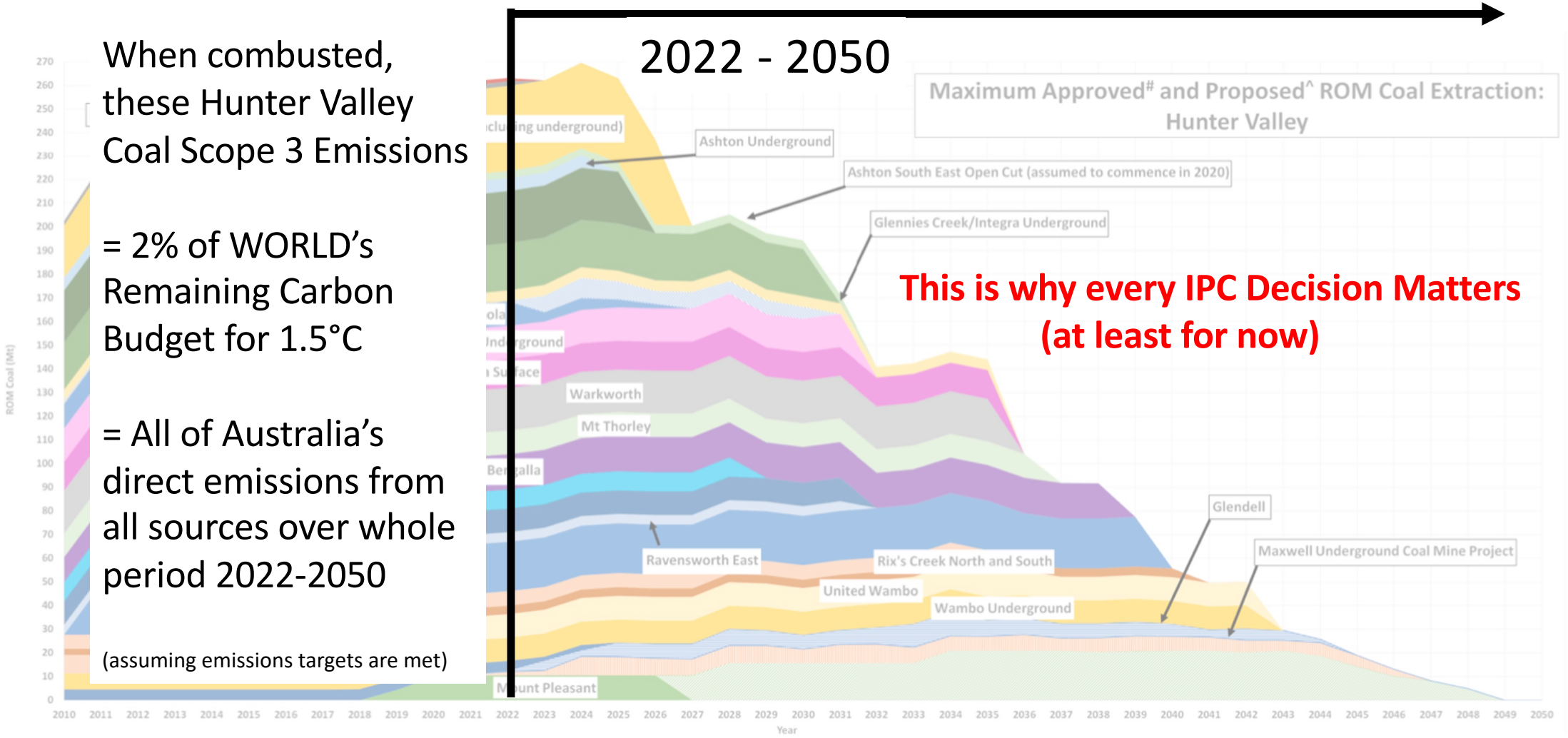
Approved and Proposed ROM Hunter Valley Coal Extraction

When combusted, these Hunter Valley Coal Scope 3 Emissions

= 2% of WORLD's Remaining Carbon Budget for 1.5°C

= All of Australia's direct emissions from all sources over whole period 2022-2050

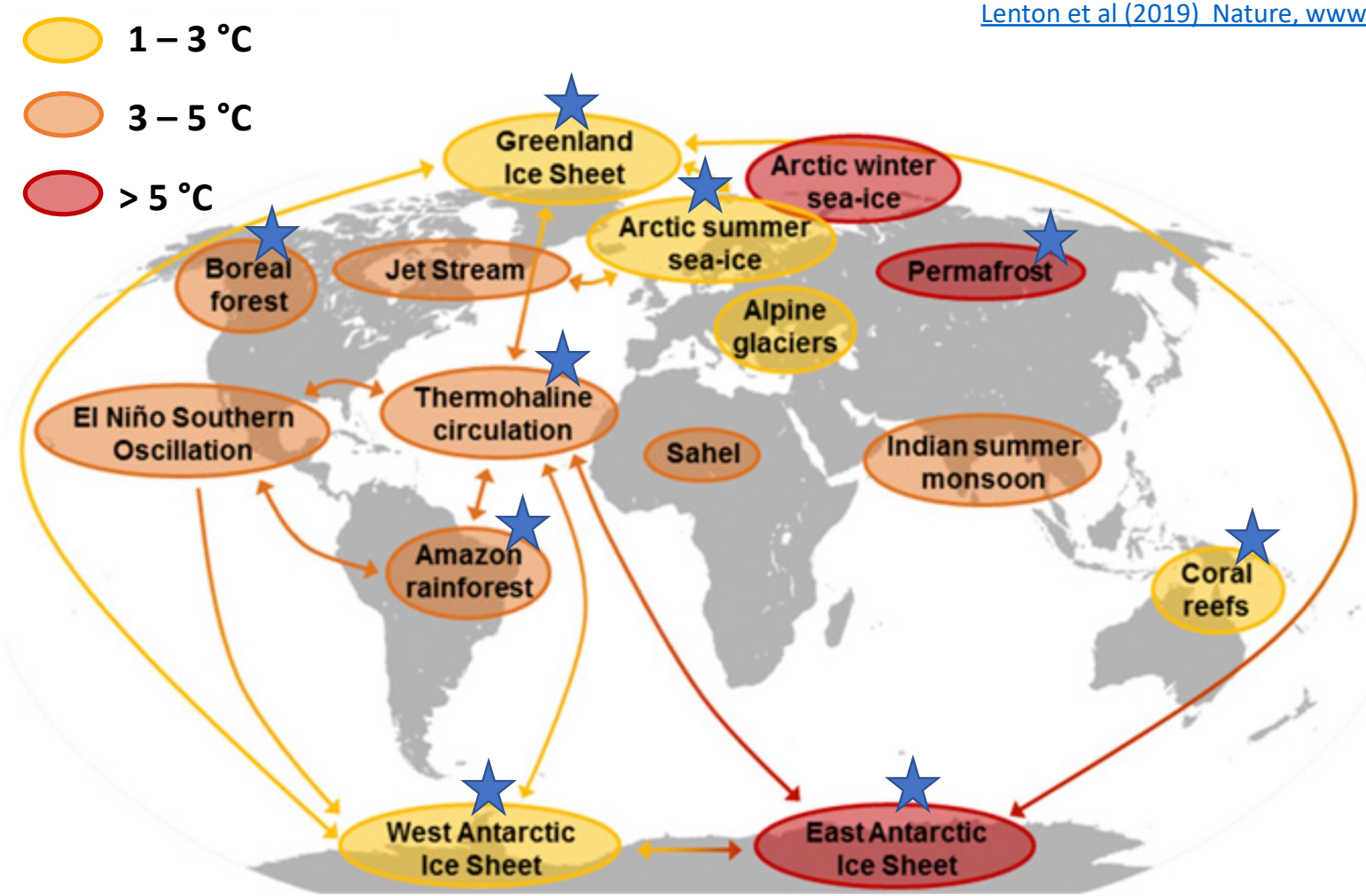
(assuming emissions targets are met)



Earth System Elements at risk of `tipping:'
9 of 15 are `on the move'★

Steffen et al (2018) PNAS, www.pnas.org/content/pnas/115/33/8252.full.pdf

Lenton et al (2019) Nature, www.nature.com/articles/d41586-019-03595-0



If these elements tip and then cascade in a domino effect,

the result could be a `Hothouse Earth'

with temperatures and sea levels not seen since the Stone Age, millions of years ago.

At that point, our climate future would be out of our hands.

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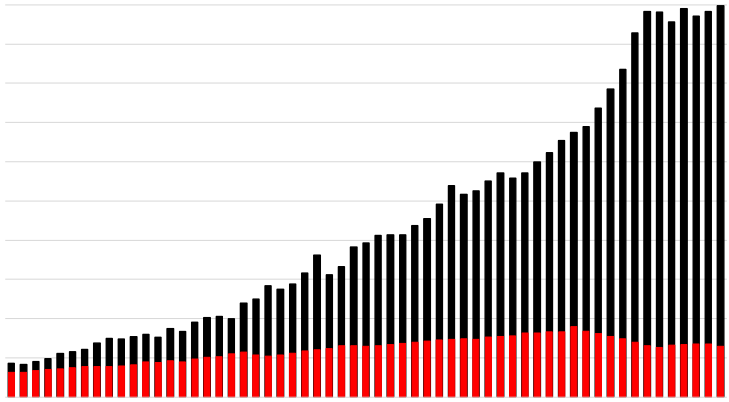

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