



**ACEAS**

Australian Centre for Excellence in Antarctic Science

A Special Research Initiative of the Australian Research Council

10 August 2022

**Senate Environment and Communications Legislation Committee**

**Climate Change Bill 2022**

**Climate Change (Consequential Amendments) Bill 2022**

The Australian Centre for Excellence in Antarctic Science (ACEAS) welcomes the opportunity to provide a submission on the Climate Change Bill 2022 and the Climate Change (Consequential Amendments) Bill 2022.

**ACEAS supports efforts to limit climate change to below 2°C and ideally below 1.5°C through a reduction in greenhouse gas emissions, in line with the Paris Agreement.**

ACEAS is funded (2021-2025) by the Australian Research Council to understand climate risks emerging from Antarctica and the Southern Ocean. The Antarctic Ice Sheet and the Southern Ocean are vulnerable to further planetary warming, with consequent effects on global sea-levels, coastal erosion and inundation, changes to ecosystems and fisheries, and weather, including in Australia.

The Antarctic Ice Sheet is highly sensitive to future emissions pathways. Antarctica is now losing 150 billion tonnes of ice to the oceans each year. The best projections suggest that high emissions of greenhouse gases will generate increased ice discharge into the ocean and potentially produce several metres of sea-level rise within just a few centuries. Much of this could be averted if the Paris Agreement to limit warming below 2°C is satisfied.

Ice within East Antarctica, where the Australian Antarctic Territory is located, is vulnerable under high emission scenarios. Some scenarios suggest the East Antarctic Ice Sheet may contribute more than 0.3 metres of sea level by 2100 and much more in subsequent centuries, but less than a third of this by 2100 with low emission scenarios.

Beyond sea level, the Intergovernmental Panel on Climate Change 6<sup>th</sup> Assessment Report highlights that extreme weather events are beginning to emerge in Antarctica, consistent with a warming climate. As highlighted in the Australian State of the Environment Report 2021, Antarctic and Southern Ocean ecosystems are at risk from the combined poleward expansion of ecosystems, especially by invasive species and the narrow thermal windows of tolerance that characterise Antarctic species. These changes are projected to be irreversible in the highest emissions scenarios. Unlike other regions influenced by the threats of climate change, species seeking an escape route from warming cannot migrate further south than Antarctica.

ACEAS will further refine scientific understanding of the sensitivity of this complex region to future regions and projections of its consequent impact on Australia, our regional neighbours, and globally.

Best Regards,

**Matt King**

Director of the ARC Centre for Excellence in Antarctic Science