

Inquiry into Australian Antarctic Division funding and its management.

I will provide some commentary across the various Terms of Reference for the Inquiry, specifically: c), f), g), h), i). These comments are aimed to highlight some of the issues that I have experienced as an Australian Antarctic researcher and see as a priority to improve for the funding and management of such Antarctic science.

It is in Australia's national interest to remain at the forefront of research in the Antarctic and Southern Ocean environment, so that Australia is informed and capable of using the knowledge that comes from this research in managing Antarctic and Southern Ocean ecosystems and resources, and in managing and responding to climate change. Australia should maintain its presence at the forefront of Antarctic and Southern Ocean research, not only used as a geopolitical tool for maintaining a physical presence in East Antarctica.

Australian Antarctic science is primarily conducted by Universities and Government research agencies (CSIRO, Australian Antarctic Division (AAD)). These groups have been/are supported by three Government Departments – Education (DE), Science (DISR) and Environment (DCCEEW).

Since 2014, Australian Antarctic research funding of order \$138M has been hosted by Australian Universities, primarily by the University of Tasmania (\$102M) and Monash University (\$36M), with funds from the Australian Research Council Special Research Initiatives program (\$88M) and the Australian Antarctic Program Partnership (AAPP) grant (\$50M). Additionally, the CRC Program funded Australian Antarctic science, hosted at the University of Tasmania in collaboration with AAD and CSIRO, from 1991-2019, with funding of order \$140M over this 28-year period.

Antarctic research within Australia is much more than the Million Year ice core and krill research, which is the current focus of the Australian Antarctic Division. Any Australian Antarctic Science Planning should involve the full complement of the Australian Antarctic community in its development and then be resourced to deliver on these strategic plans. At the current time, there are SRI and AAPP science funded programs that cannot deliver their full science potential due to lack of funded logistical support and research infrastructure.

A whole-of-Government approach is needed to assess and distribute national funding for Antarctic research, allocate logistical support, provide required research infrastructure and ship time for these research projects, and coordinate the efficient use of Australian resources with other international partner countries involved in Antarctic research. Antarctic research requires considerable resources to undertake and involves a large coordinated body of people to deliver such programs. Australia should endeavour to collaborate with other international agencies to maintain Australia's world-leading Antarctic science capacity.

As an example of the current inefficient use of resources for Antarctic research, University researchers typically have to apply for funding/logistical support for their research to ARC (research grants), the Marine National Facility (ship time) and the AAD (ship time, logistical support, grants?). Each of these three funding options have their own peer review system, different success rates and funding time frames from application to funding announcements.

Such a complex system between key Government agencies providing Antarctic funding can led to perverse outcomes – as has happened in the past, ARC research grants are funded but AAD logistics were not provided or cancelled within the ARC grant period; cruises approved but research grants were not successful in providing the needed research support. It has also been the case in the past under AAD AAS grants, that high science ranking does not beat the internal AAD decided logistical support criteria, so logistics beats science ranking is the normal outcome.

A better international best practice example is in the USA and UK, where National Science Foundation (NSF, USA) and National Environment Research Council (NERC, UK) grants are peer reviewed and if the grants are successful, the required logistics to conduct the research are allocated. There is not the 3-way complication that exists in Australia to undertake Antarctic and Southern Ocean science.

There is a need for adequate funding for the coordinated use of research infrastructure to undertake Antarctic science – long-term observing networks, such as tide gauges and meteorological networks, repeat hydrographic cruises, Argo floats, gliders, on ice-shelf geophysical and glaciological instruments, etc. Such research infrastructure should align with the Australian Antarctic Science strategic plans and be properly maintained by the various agencies and where appropriate, in coordination with other international partners, such a joint cruises, instrument deployment, etc.

AAD has not been able to maintain/provide logistical support for much of the Antarctic science projects over the last decade without support from ARC SRI and CRC programs, and even then at reduced levels that have not been able to deliver the promised science milestones. An example is the Marginal Ice Zone (MIZ) research – the recent planned MIZ science cruise was cancelled. Australia has **never** conducted a proper MIZ science program, rather two SIPEX (Sea Ice Physics and Ecosystems eXperiment) cruises in 2007 and 2012 that were in pack ice areas. The current alarming levels of extreme summer and winter Antarctic sea ice deficit should be investigated via ship programs to support the available satellite data. Australia has missed an opportunity for at least the next 2-3 years to conduct such a much needed MIZ cruise. Additionally over the last 5 years AAD has cancelled a number of fast-ice field programs as it has allocated resources to other priorities (non-science).

Such a lack of supported AAD science logistics has led a number of Australian researchers to work with other international groups (such as New Zealand, Japan, Korea, France, United Kingdom) to gain access to Antarctic field programs. The situation also exists that other countries are now conducting research cruises and field programs within the Australian East Antarctic sector – some examples are: Japan with planned Totten ice shelf programs, Germany have approved cruises across the East Antarctic sector in the coming season (EAIS-2, EAIS-3), China has regular field work in the Prydz Bay/Amery region.

Funding for the AAD to maintain Australia's Antarctic activities needs to be urgently addressed at levels to support the existing ARC SRI/AAPP programs and future Australian Antarctic Science Plans. Disjointed, terminated and/or interrupted funding has a significant detrimental effect on Australia's efforts to maintain a world-leading Antarctic science capacity and credibility. All new AAD science hires (some 14 positions) are on hold or lost.