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Australian Marine Sciences Association response to consultation on Australia's draft National Science and Research Priorities

The Australian Marine Sciences Association (AMSA) is pleased to provide a submission on Australia's draft Science and Research Priorities and National Science Statement. AMSA is Australia's largest professional society of marine scientists with close to one thousand members nationwide. AMSA actively promotes the advancement of marine sciences in Australia and engages in public debate where our members have specialist knowledge. Our members work across research agencies, universities, museums, government departments, and the private sector, and have expertise spanning all disciplines related to marine sciences. AMSA provides science-based position papers and statements on marine issues and throughout its, over 60-year, history has been influential in the development of marine science policy in Australia. AMSA is also a member of the National Marine Science Committee and Science & Technology Australia.

AMSA supports the currently stipulated high-level priorities and objectives; however we provide suggestions below in response to the consultation questions to help strengthen and refine the draft priorities and objectives.

Feedback on consultation questions:

1. The draft priorities intend to identify specific challenges facing the country that will require multidisciplinary and multisector efforts to address. Do they achieve this objective? How can we improve them?

AMSA views the priorities as generally successful in identifying specific challenges facing Australia that will require multidisciplinary and multisector efforts to address, and offers the following suggestions for improving them:

- Priority 1 has a focus on climate mitigation and biodiversity protection/restoration, however as currently written it largely misses the equally important areas of climate *adaptation* and *biodiversity/nature positive*. In addition, the specific suggestions provided in response to question 3 below, the following changes could therefore be implemented to improve priority 1.
    - Reword the objective "Protect and restore" biodiversity to "Support net positive impact on biodiversity" or "Support nature positive". This change is needed because it is increasingly widely recognised that traditional approaches to protection and restoration will not be adequate to halt or reverse biodiversity decline in Australia or worldwide, and the suggested wording is also more consistent with developing understanding of "best practice" in this domain.

- Reword the aim "*Australia will understand likely future conditions and risks for our climate and environment and draw on complementary knowledge systems to address and mitigate climate change impacts (Understand and sustain our environment).*" to "*Australia will understand likely future conditions and risks for our climate and environment and draw on complementary knowledge systems to adapt to climate change impacts (Understand and sustain our environment).*" This change is needed because the way that term "mitigation" is used in the current wording is not consistent with its conventional usage in the context of climate change (where "mitigation" specifically refers to emissions reduction and "adaptation" refers to avoidance/reduction of impacts of released change).

- We can see some advantage to the current structure with net zero and biodiversity combined as a single priority, in that this structure (i) identifies both as the top priority, rather than relegating one or the other to 2nd, and (ii) reflects the key role of global ecosystems in carbon drawdown. However, we also recognise that there may be compelling reasons for separating these priorities. This is because the scope of net zero spans beyond biodiversity. Linking with the other priorities (as illustrated in Fig 3 of the draft, but not currently reflected in the text) or making it a standalone or cross-cutting priority could help use social and economic drivers to promote net zero.

2. Feedback stressed the need to work in partnership with First Nations people to embed First Nations knowledge and knowledge systems in the way we address national challenges. How might governments and the science and research sector best work with First Nations people to achieve this objective?

AMSA recognises that Aboriginal and Torres Strait Islanders have a long and enduring connection to Sea Country and should play a greater role in the leadership and delivery of science and management. The combination of traditional knowledge and Western science will give the strongest foundation to understand ecosystems and inform modern management decisions. It also expands our ecological and cultural knowledge, as well as increasing the capability, capacity and geographic reach of Traditional Owners' activities.

AMSA's view is that the current vision, articulated in the draft, of *working in partnership* with First Nations people to address national challenges is not adequate. We suggest that an additional required element of this vision is *fostering Indigenous science leadership and knowledge governance*. There are likely to be important lessons to be learned from the NZ experience and model of mātauranga Māori and kaupapa Māori in this regard.

3. The draft priorities provide a range of critical research paths. How could we refine these research paths, for example, to address immediate challenges?

For challenge 1, several of the critical research areas could be refined as follows

- Reword "Improved forms of data collection, monitoring and analysis to support environmental and climate-related decision making." to … "fit for purpose integrated monitoring and assessment systems to support environmental and climate-related decision making".
- Reword "Sustainable use of freshwater and ocean resources for food, industry, and environmental and community health." to … "Sustainable use of freshwater and ocean environments and resources, including both extractive and non-extractive uses, to support resilient environments, communities and human wellbeing."
- Reword "Prediction of habitat and biodiversity change and ways to reverse declining biodiversity" to … "Prediction of ecosystem and biodiversity change and ways reverse declining biodiversity and support sustainability of ecosystem services". This is because habitats are just one facet of ecosystems that contribute to ongoing ecosystem health and ecosystem service provision.

4. How would you implement the priorities in your organisation or setting? What mechanisms would support implementation?

The implementation of these priorities would be different across the organisations represented by the AMSA membership, however a common mechanism to support implementation would be incentives and adequate resourcing. This would include, for example, ensuring that national research funding is at a total level that is commensurate with the scale of the challenges reflected in the priorities (which is not the case for the current level of national investment in research) and that the prioritisation of funding is also commensurate with the relative rank of the priorities (again, this is not currently the case, with dramatic under-investment in biodiversity and environmental research). It would also include sufficient investment in the mandates and structures required to facilitate the coordination and collaboration required to meet the objectives. For example to "understand and sustain our environment", a national coordinating body will be required to provide oversight and coordination, as articulated in the National Marine Science Committee's recent report on Establishing and supporting a national marine baselines and monitoring program[1]). This is particularly true for the marine environment where coordinated (not purely patchy sectorally based) data collection is urgently needed to support understanding, but also decision making, around increasingly stressed and crowded ocean spaces.

5. The National Science Statement will explain the role our science systems will play in delivering the priorities and maximising the benefits from science for Australia. How can the following best support the priorities:
a. Science agencies
b. Science infrastructure
c. Australian government science programs
d. Domestic and international science relationships.

The process for consultation and development of the National Science Statement, the manner in which this links to consultation to date on the National Priorities, and the potential form that the Statement might take are not clear to AMSA at this stage. For this reason, it is difficult for AMSA to provide concrete input towards the Statement on how the listed entities might best support the Priorities. In a general sense, AMSA thinks that key elements would be:

- Diversity, inclusion and belonging in science agencies and programs.
- Adequate, stable and long-term resourcing for science infrastructure in the marine space (including for marine observation/monitoring and assessment Antarctic/Southern Ocean science).
- Adequate institutional support from science agencies and government science programs for continuing building and maintenance of domestic and international science relationship and Australia's reputation in science excellence.

Hedge P, Souter D, Jordan A, Trebilco R, Ward T, van Ruth P, Cowlishaw M, Lara-Lopez A, Barrett N, Thornborough K, Nichol S, Przeslawski R, Parr A, Kendrick A, Holmes T, Pattiaratchi C, Ferns L (2021) Establishing and supporting a national marine baselines and monitoring program. A report from the Baselines and Monitoring Working Group prepared for Australia's National Marine Science Committee. https://www.marinescience.net.au/wp-content/uploads/2023/02/SUMMARY_REPORT_National_Marine_Baselines_FINAL.pdf