Flipping the Tide:

A First Nations vision for Indigenous leadership in sustainable ocean culture

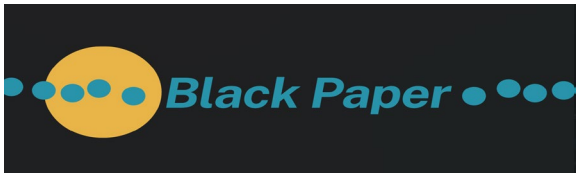

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Figure 8 Re-structure to governance.
Figure 9 Right foot and wrong foot engagement.

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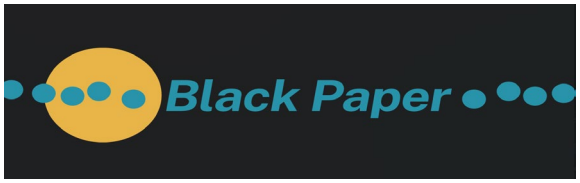
We also wish to acknowledge the National Marine Science Committee co-chairs and committee members for recognising that First Nations voices in marine science leadership have been largely missing from the Australian marine science, policy and management landscape, and for commissioning this paper. We also thank the Australian Institute of Marine Science for supporting the workshop and think-tanks that brought the co-author group together to collectively develop this paper. To the many reviewers that provided helpful comments and feedback to improve the draft paper, we also say thankyou.

Most importantly, we acknowledge in advance the Aboriginal and Torres Strait Islander Peoples who will carry the story in this paper forward into the future, and the senior decision makers who will enable that to happen.

Before anything else, there was relationship.

Sea Country is not a resource. It is kin. It is lore. It is memory. This paper begins not with policy, but with story, with the understanding that what follows is built on tens of thousands of years of science, ceremony, and consequence.



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Abstract

This **Black Paper** presents a blueprint for structural change across the marine research, policy, management, and development sectors. Through critical reflection on the current compass directions, we present an alternative vision with a backbone to incorporating all that our diverse marine sectors, roles and responsibilities can contribute towards a more equitable and sustainable ocean development future. Realising our rights and vision requires much more than a mere valuing and integration of knowledge systems. It demands the dismantling of the many barriers that have been keeping Indigenous Knowledge Systems and Indigenous science leadership sidelined from national and global agendas in marine science, policy and management. It also requires a re-balance of the priorities and goals of marine management, to re-position the importance of all forms of knowledge and environmental, social and cultural outcomes alongside sustainable economic activities.

We propose to achieve this through the establishment of two new national bodies: a National Aboriginal and Torres Strait Islander Marine Science Institute (NATSIMSI) with regional hubs; and a National Indigenous Peak Body for Sea Country. NATSIMSI will provide a culturally safe and coordinated, Indigenous-led platform for training and empowerment of the next generations of Indigenous marine scientists and custodians, including by feeding into Indigenous alliances such as the National Indigenous Environmental Research Network (NIERN). It will also set standards and create space for culturally respectful collaborations across the broader marine science sector. The proposed Peak Body will complement NATSIMSI through nation-wide coordination and delivery of Indigenous perspectives from across all states and territories to help ensure Indigenous voices and their messages are heard in key decision-making forums and are unwavering in national policy advocacy and reform. They will also facilitate two-way learning, partnerships, and collaborations in the science industry.

These two institutions will drive improvements in the recognition and standing of Indigenous science leadership and Indigenous Knowledge Systems, improvements in training and development pathways for Indigenous marine scientists and practitioners and create fairer equity in the Blue Economy through Indigenous circular economies. Their influence will lead the necessary depth of policy reforms to re-assert an authentic sustainability backbone and a rebalancing of goals and priorities between people, planet, and profit. This black paper is a welcome first for Indigenous leadership to contribute to the development of Australia's National Marine Science Plan, and an important milestone on the journey to realise our vision. The paper concludes with six key recommendations that strive to pivot our compass around equitable co-benefits across people, planet and profit, and place the leadership of Traditional Custodians at the helm of steering a new course.

1. A Paradigm Shift in Sustainable Development Culture

For thousands of years, Aboriginal and Torres Strait Islanders have been upholding cultural stewardship with sustainable development practices fostered within a backbone of culturally wise sustainability. Through this backbone, Indigenous leaders and communities have been developing our own narratives around the beat of a sustainable development drum that puts our unique lens to the western concept of a triple bottom line around People, Planet and Profit. A centred backbone that is grounded to authentic sustainability culture means profit cannot be skewed away from the necessity to also protect people and planet (Figure 1). The yardstick of sustainable development must be matched to the responsibility of upholding sustainable practices. In Australia, we need to re-assert the backbone of responsible sustainable development through more equitable balancing between the interests of humans, environment and economics.

Figure 1: Re-asserting a sustainability backbone with accountability to ensure profit is not detached from its connection to planet and people.

Equity is rarely enacted in sustainable ocean development frameworks resulting in the flawed premise that benefits and costs are fairly distributed across a diverse array of individuals and groups of people. A significant challenge is that, unlike the concept of equality (equal access to resources), equity (equal access to opportunity) can be

relative, perceived or actual. Exactly how equity affects sustainable development success and individual actors' involvement is an underdeveloped area of research. Indigenous peoples and local communities across the globe have been striving for the structural changes needed for equitable and sustainable development at local, national and international scales. This call for change has been advocated through the countless meetings, forums, letter-writing, court challenges and courageous conversations from often ill-informed understandings of First Nation rights and aspirations. We now need more purposefully designed ocean reconciliation forums that position First Nations people at the decision-making table along with key others who hold the levers of change within the agenda of equitable sustainable development.

This Black Paper is a call to action to once again embed Aboriginal and Torres Strait Islander Indigenous Knowledge Systems and leadership at the very heart of the national agenda for marine research, policy making and environmental management, and Australia's collective marine custodianship. Thirteen of the fourteen authors of this Black Paper are Indigenous and our co-author group was formed by the coming together from around our Country to develop its vision and call upon change. We have called it a Black Paper instead of a white paper because Indigenous leadership and directions are core to the paper.

1.1 Significance of this Black paper

This **Black Paper** presents a bold and necessary vision to create a role renewal for Aboriginal and Torres Strait Islander peoples to be properly recognised and supported as the Traditional Custodians of Sea Country and key leaders and partners in the management of our oceans and coasts. By working together to address the complexities of marine management and authentically sustainable development of our Oceans — respectfully and collaboratively — we can build a future where our sea Country and sea-Kin are protected, healed, restored, and able to sustainably thrive for the collective benefit of generations to come. This Black Paper is the first time that Indigenous authors have had the opportunity to directly contribute to the development of the National Marine Science Plan. We hope our messages for renewed visibility and involvement of Indigenous leaders in Australian sustainable ocean development are heard and carried forward into the next decadal plan that will guide us towards 2035.

> ***This is not a proposal. It is a remembering. It is a return.***
> *What's set out in this paper is not new to us, it is ancient, tested, and alive. The invitation is not to accept our knowledge, but to walk with it. To unlearn what silenced it. To make room for a future that listens deeply, restores honestly, and respects what has always been in motion: Sea Country, and those who care for it.*

1. 2 Our bold vision

> ***A vision is not always something new, it is often something remembered.***
> *For Aboriginal and Torres Strait Islander Peoples, the future of marine science lies in returning to what has always guided us: relationships, obligations, and the unbroken knowledge that Sea Country speaks, and we listen.*

Our vision is to flip the script through audacious leadership to deliver authentically sustainable and equitable marine research, policy, management and development. Our vision requires a complete restructure of the sector to address the following honest realities.

1) **Effective investment into collective leadership**. We can no longer expect this to simply unfold with the current inadequate level of investment. It needs direct investment especially for national collective leadership. There are many examples of under-investment in collective leadership. For example, the important task of developing the next National Marine Science Plan does not appear to have a funding allocation for collaborative leadership to bring all sectors together. This is not a criticism of the National Marine Science Committee, rather a reflection to highlight the lack of investment in collective leadership across all sectors in the committee's work. It is important that we stop expecting critical tasks to be solely fuelled by goodwill.
2) **Decision making forums with the right actors at the table.** We need more than a realisation of multiple knowledge systems — we need to support multiple diverse knowledge holders to be at the table, and we need Indigenous leadership in the design and development of appropriate platforms. We need to stop to ask the question, 'In our Country, could we be more sustainable in the future with Indigenous leadership at the table given their long-term track record of accountability to sustainability in this Country?'.
3) **A Marine Science agenda that is no longer driven solely by government regulators and research organisations and associations**. While it might be more convenient to always go to science organisations for the solutions and guidance in national marine science agendas and priority setting, there are many other groups and leaders that provide relevant research and development into the marine science ecosystem. The National Marine Science Committee would benefit from inclusion of Indigenous leadership, noting that 36 of the current 39 members are from government or marine science sectors and there are no members providing a uniquely Indigenous perspective at that table.
4) **An authentic backbone for equitable and accountable sustainable development** (See Figure 1).

To address these realities, we need a seismic paradigm shift away from business as usual, to expose and re-assess the questions driving the how, why and who is leading marine research and sustainable ocean development in our nation. The Blueprint in this Black Paper does not provide all the answers but critically reflects on the current compass and direction being set around equitable co-benefits across people, planet and profit. Actioning the six key recommendations outlined in this paper will help to equip us as a nation to re-assess and correct the current course, remove blind spots, and confidently incorporate all that our diverse marine sectors, roles and responsibilities can contribute towards a more equitable and sustainable ocean development future.

This is a vision for structural reform that returns decision-making power and supports Indigenous Peoples to thrive as economic, cultural, and environmental stewards of their Sea Country. This is not only a moral imperative — it is a strategic investment in Australia's environmental resilience, cultural diversity, and marine innovation on a global stage.

1.3 Indigenous Leadership in Sustainable Ocean Development

> ***Sometimes, the purpose is already living in the practice.***
> *For generations, our communities have cared for Sea Country without fanfare, committees, or formal strategies. The knowledge is held in ceremony, obligation, and kinship. This paper simply invites others to see that what they seek is already here and always has been.*

Australia's Sea Country and sea-Kin have been — and continue to be — our identity and lifeblood woven through our Ancestral lines, Dreamings and Songlines since time immemorial. As the cultural custodians of Australia's vast, interconnected marine realm and the first marine scientists to observe and study it, First Nations people revere and respect the oceans as a sacred living entity interconnected with ourselves, its creation, and our ancestors. Our inherited responsibility to care for land and sea Country as Kin and a living entity rather than a resource to be used or managed, has endured over millennia through periods of massive environmental and sea-level change, including the post-glacial inundation of one third of Australia's (then) inhabited land mass (1).

First Nations stewardship of land and sea over tens of thousands of years included a society embedded in environmental management with sustainable trade economy which benefited the first colony. The Gadigal women provided the colony with seafood

that they carefully collected according to calculated levels of sustainable harvesting, according to lore and sustainable management principles with protected species and places. Opportunity to continue this practice was ultimately severed by colonisation through ignorance and constant breaking of lore by the colonisers. However, the legacy of millennial First Nations marine stewardship is that it continues to deliver modern Australia with a marine estate that makes a massive $203B contribution to the national economy (2). Indigenous Australians have always been participants in all marine industry sectors and so contribute significantly beyond the role of ongoing stewardship.

Aboriginal and Torres Strait Islander peoples have long played a central role in knowing and managing Sea Country including in the following ways:

- Knowledge of seasonal cycles, marine species biology and behaviour and sustainable harvesting methods often through communal practice.
- Knowledge of major climatic and environmental changes and how to adapt to them. For example, details about the inundation of land by rising sea levels around 7000 years ago are still known and told by today's First Nations communities across the Australia's coastline (1).
- A cultural system of existence derived from nature and its careful conservation and management.
- Lore to regulate behaviour and inherent management of marine species by maintaining and restricting access to sacred sites and species.
- Application of sophisticated aquaculture practices, from eel farming in southern Australia, to stone fish traps and clam gardens in north Queensland.
- Maintaining healthy coastal vegetation to prevent erosion, through traditional burning and fire stick farming.
- Custodianship and governance systems through kinship systems, lore and responsibilities to dictate how marine resources are used and protected.

Indigenous knowledge systems and practices are valid and valuable knowledge systems based on tens of thousands of years of environmental research and observation, passed from generation to generation. Recent decades have proven that this way of knowing can sit alongside and complement contemporary western science, by moving away from the notion as novelty to creating an exciting opportunity to build enduring partnerships between Cultural custodians and contemporary science — underpinned by cultural integrity, mutual respect, and a commitment to shared goals. Such a future will benefit the health of our Sea Country for generations to come and establish Australia as a global leader in marine conservation, guided by the wisdom and integrity of both knowledge systems.

To realise our vision requires much more than a mere integration of knowledge systems. It demands the dismantling of the many barriers that have kept Indigenous Knowledge Systems and Indigenous science leadership sidelined from national and global conversations about marine science. It requires a re-balance of the priorities and goals of marine management, to re-position the importance of all forms of knowledge and environmental, social and cultural outcomes alongside sustainable economic activities.

In Australia, during the last decade there have been shifts in the acknowledgement of the traditional use and rights of Indigenous Australians in their connections with coastal and marine environments or 'Sea Country'. Some outcomes from this recognition have been the Traditional Owner led commercial fishing operations, development and implementation of Sea Country Plans, Indigenous Protected Areas, and Traditional Use of Marine Resource Agreements. The Australian Government's support for these plans upholds its commitment to Indigenous people in negotiating with other marine managers and users to develop policies and institutional arrangements that are respectful of Indigenous rights, traditions and responsibilities. Yet, there is more that needs to be done to build and embed the trajectory of working alongside Traditional Custodians and their knowledge systems.

2. Current State of Indigenous Marine Research, Management and Policy

Since implementation of the 2015-2025 National Marine Science Plan there have been some positive steps towards greater recognition and support for the role of First Nations Australians in land and sea research, management and policy. These are outlined below.

2.1. Indigenous Scientists, Alliances and the Ranger sector

> ***Just because we've not always been seen and counted, doesn't mean we haven't been here.*** *Our science has always been at work, on the tides, in the migrations, beside the reef. It lives in the hands of our Rangers, the memories of our Elders, and the quiet acts of care that happen whether the research vessel comes or not.*

Indigenous land and sea management is a growth area in Australia and the demand for Indigenous scientific knowledge, leadership, and expertise is rapidly increasing. In the marine sector, Indigenous science leadership is reflected through the many roles

outside the perception that science can only be led by academically qualified scientists employed by research organisations (Figure 2). Indigenous Rangers under the guidance of Elders and senior knowledge holders are leading research, science and innovation on Country. The diversity of work roles on Country and the increasing numbers of Indigenous Rangers, Indigenous Scientists, leaders, learners, and practitioners are collectively dialling up the many ways that Indigenous leadership is contributing to local, regional and national research and development agendas (3). While there is still an absence of a national Indigenous peak body in the environmental space in Australia, let alone the marine environmental space, this does not mean Indigenous leadership has been absent from national science and marine science planning and practice.

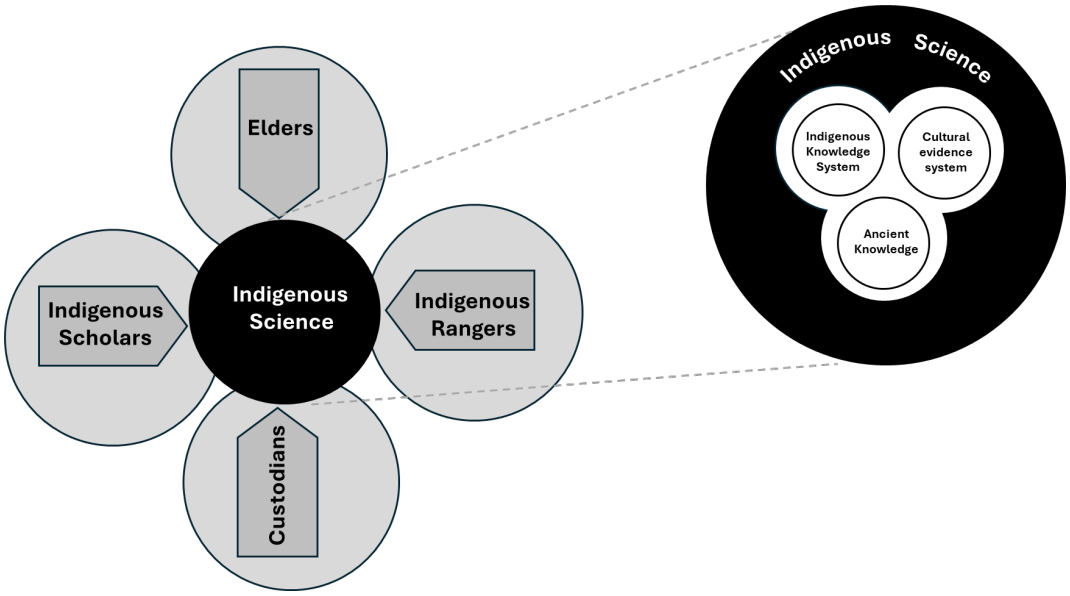


Figure 2: The many Indigenous responsibilities and roles contributing to Indigenous science.

Across Australia, a number of initiatives are building and evolving Indigenous Alliances, as well as, creating regional and national peak bodies (Figure 3). For example, a transformative entity called the National Indigenous Environmental Research Network (NIERN) is emerging to help guide relationships between Indigenous organisations, researchers, policymakers, and environmental management practitioners. NIERN is an Indigenous-led and developed initiative and has been designed as a rights-based Indigenous science approach with a community of practice of Indigenous knowledge holders and researchers. It aims to embed Indigenous people in all decision processes and increase the empowerment of Indigenous-led self-determined research priorities, design of research methods and interpretation of findings, and evaluation of outputs and outcomes (4). If resourced into the future, NIERN will form a central part of the National Aboriginal and Torres Strait Islander Marine Science Institute proposed in section 3 of this paper.

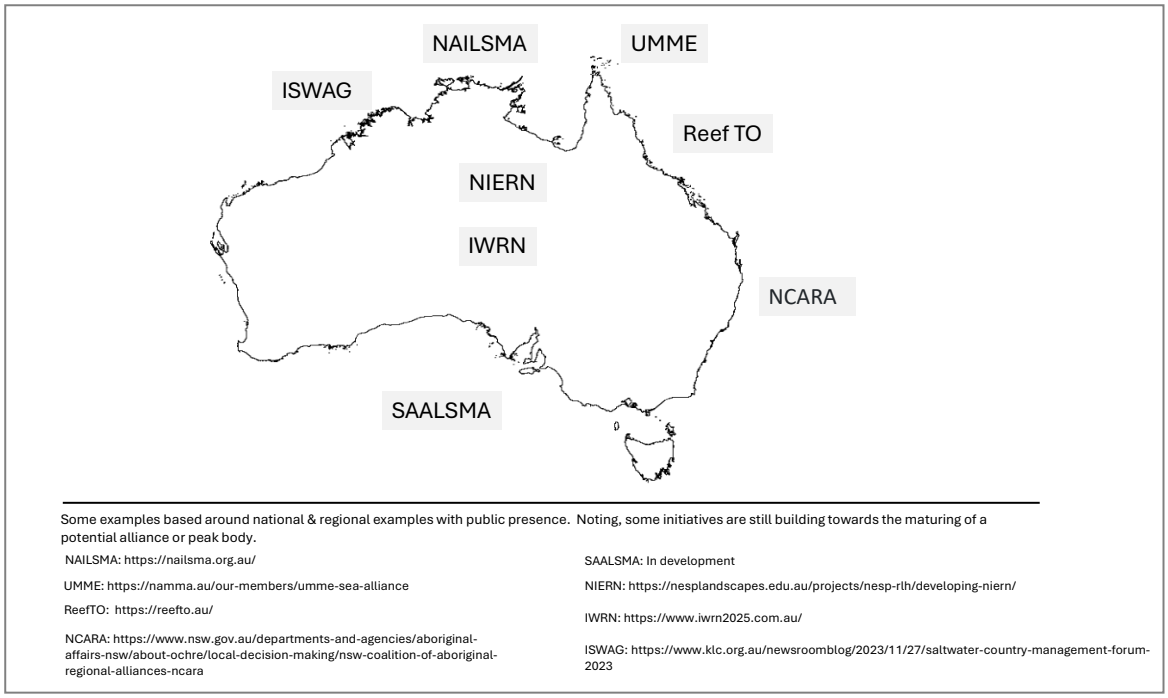


Figure 3: A range of emerging and matured regional and national initiatives working towards strengthening Indigenous alliances and peak bodies. Note, this is not comprehensive of all possible networks, alliances and peak bodies.

While national and centralised frameworks guiding Indigenous peak bodies are essential levers to elevate First Nations voices and leadership in the marine space, any models that encompass national footprints need to also ensure that place-based perspectives and learnings from within communities are driving the reform work (Figure 4). Learnings and evaluations are also building a national approach within the Indigenous Ranger sector. A recent consultation process with rangers and Traditional Custodians regarding the establishment of a nationally consistent Indigenous Ranger sector, learnt that the governance of ranger groups needs to increase the focus on Country and culture, and support stronger Indigenous leadership and recognition of the decision making authority of Traditional Custodians (5).

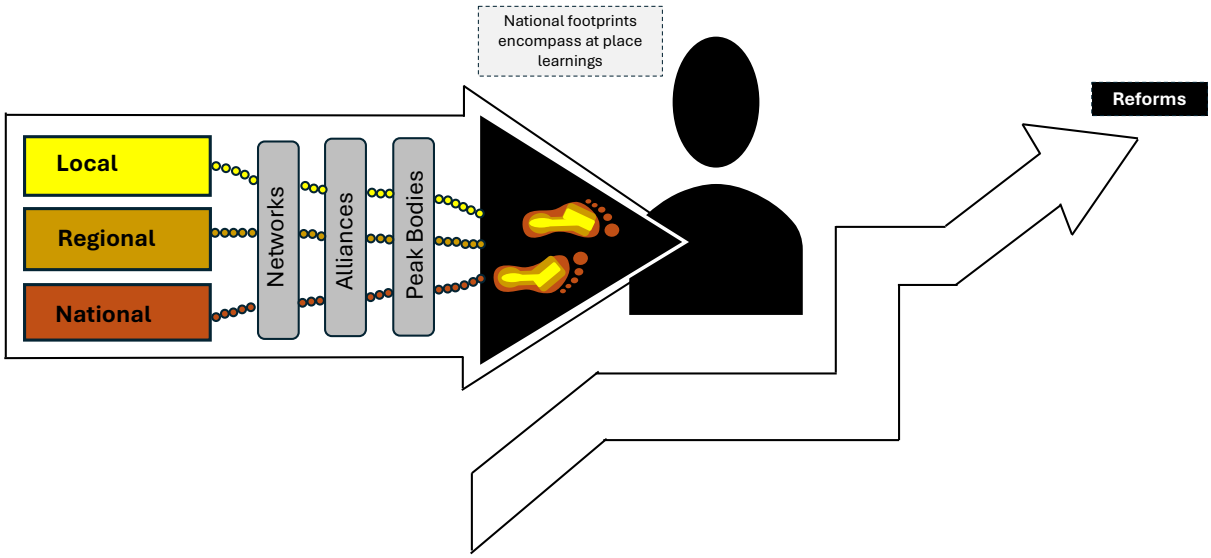


Figure 4: Linking local, regional and national initiatives towards strengthening the networks, alliances and peak bodies driving change and reforms to maximise the influence of Indigenous leadership and direction.

The Indigenous Protected Area (IPA) and Indigenous Ranger programs have made great progress in supporting First Nations-led biodiversity conservation and management on their own land and sea Country, and the National Indigenous Australians Agency (NIAA) has now established a First Nations-led Indigenous Rangers Reference Group to finalise the national ranger strategy and improve and expand the ranger sector with an additional $636.4M in Commonwealth funding over 6 years (6). There are around 170 community-based Indigenous Ranger groups around Australia funded under State or Commonwealth government programs, with many operating in coastal areas (5). IPAs now cover over 100 million hectares and contribute more than 50% of Australia's commitment of 30 by 30 — to protect at least 30% of land and sea by 2030 (7). In Queensland alone, there are 46 Indigenous teams and over 200 rangers working in coastal and marine environments, protecting seascapes, conducting sea patrols, monitoring biodiversity and managing marine ecosystems in line with traditional practices (8) (Figure 5).

The contribution and value of IPA's and related ranger programs to the national economy is also considerable. A Social Return on Investment analysis estimated that between 2009-2015, $96.5M in social, economic, cultural and environmental value was returned from a combined investment of $35.2M into five IPAs across Australia (9). Similar analyses across the sector will undoubtedly further demonstrate the substantial monetised return on IPA and ranger program investment and provide ample justification for increased, secure and longer-term funding in future.

Despite these advances in the profile of the Indigenous Ranger sector, there remains a gap between what is expected from western and or government structures and the cultural responsibilities and obligations that rangers have on behalf of their Elders and communities at large. Recent engagements with Indigenous Rangers at regional and

national forums held over the past year found that rangers with marine stewardship responsibilities are frustrated with role scope, being limited to deliver core tasks required of Government, such as marine debris collection, biosecurity tasks and compliance reporting. For example, many have Sea Country plans that are inclusive of management objectives for cultural heritage, threatened species, biodiversity and ecosystems. To deliver effective stewardship, many rangers aspire to collect robust scientific data to monitor the health of priority Sea Country attributes and establish evidence that can underpin and inform management decisions. Indigenous-led collaborations between rangers and research organisations are needed to support rangers in meeting their aspirations inclusive of cultural obligations, cultural science and intergenerational knowledge transfer. An example is the Northern Australian Marine Monitoring Alliance (NAMMA) which has developed and validated monitoring methods, training packages and culturally safe data handling with full protection of ICIP and data sovereignty (10).

Figure 5: Key outputs from the Queensland Indigenous Land and Sea Ranger Program over the 12 month period 2023-2024. Source: (8)

2.2. Free Prior Informed Consent (FPIC) and Indigenous voices in marine decision making

The United Nations Declaration on the Rights of Indigenous Peoples (UNDRIP) (11) is a comprehensive international framework for recognising and protecting the rights of

Indigenous Peoples including rights to self-determination, Country, culture, language, and governance. Importantly, UNDRIP establishes these rights as basic human rights within the domain of the United Nations Office of the High Commissioner of Human Rights and requires that parties to UNDRIP apply the principle of Free Prior Informed Consent when implementing measures that might impact the rights and interests of Indigenous peoples. UNDRIP is a non-binding instrument but in April 2025 at the 24th session of the United Nations Permanent Forum on Indigenous Issues, over 1000 delegates lamented the inconsistent and insufficient progress towards its global implementation. In the words of UN secretary general Antonio Guterres "The individual and collective rights of Indigenous Peoples are non-negotiable. Governments must honour their obligations in the Declaration on the Rights of Indigenous Peoples - without delay!" (12).

After being one of four countries to vote against it's adoption in the United Nations General Assembly in 2007, Australia adopted the UNDRIP in 2009, however no mechanism has yet been established for implementing and ratifying it domestically. There remains a disconnect between the obligations of UNDRIP and Australia's statutory regulation of marine research, management and resource use. Senator Lidia Thorpe's United Nations Declaration on the Rights of Indigenous People Bill 2022 proposed a relatively simple approach based on laws already implemented in Canada, for a framework to consult and collaborate with Indigenous people to create consistency between UNDRIP and Commonwealth laws, through preparation of an action plan with annual reporting to Government (13). The following year, the Bill was debated but ultimately failed, (27 votes to 10) (14). Almost simultaneously, a senate enquiry also recommended that Australia establish a National Action Plan, in consultation with Aboriginal and Torres Strait Islander peoples, to implement UNDRIP in Australia through legislative, policy and other approaches across all levels of government (15).

The Government is yet to provide a formal response to that inquiry, and the authors of this paper were unable to locate any Australian law that explicitly mandates FPIC for actions that affect Indigenous peoples. For example, environment and planning laws, Cultural Heritage Acts and the Native Title Act 1993 require 'consultation' with Traditional Custodians but not the UNDRIP standard of FPIC. A comprehensive regulatory reform is required if Australia is to implement UNDRIP fully and, in particular, position Traditional Custodians as the decision makers through FPIC processes.

One sector which has a significant footprint on Australia's Sea Country and a history of conflict with Indigenous interests in development decision making, is the oil and gas industry, particularly in the north-west of Western Australia, the Arafura-Timor region and Bass Strait (Figure 2). As the regulator of offshore oil and gas operations, the National Offshore Petroleum Safety and Environmental Management Authority

(NOPSEMA) requires proponents of new offshore petroleum projects to submit an environment plan which demonstrates how the concerns, claims and objections raised by relevant persons such as Traditional Custodians, have been taken into account (16).

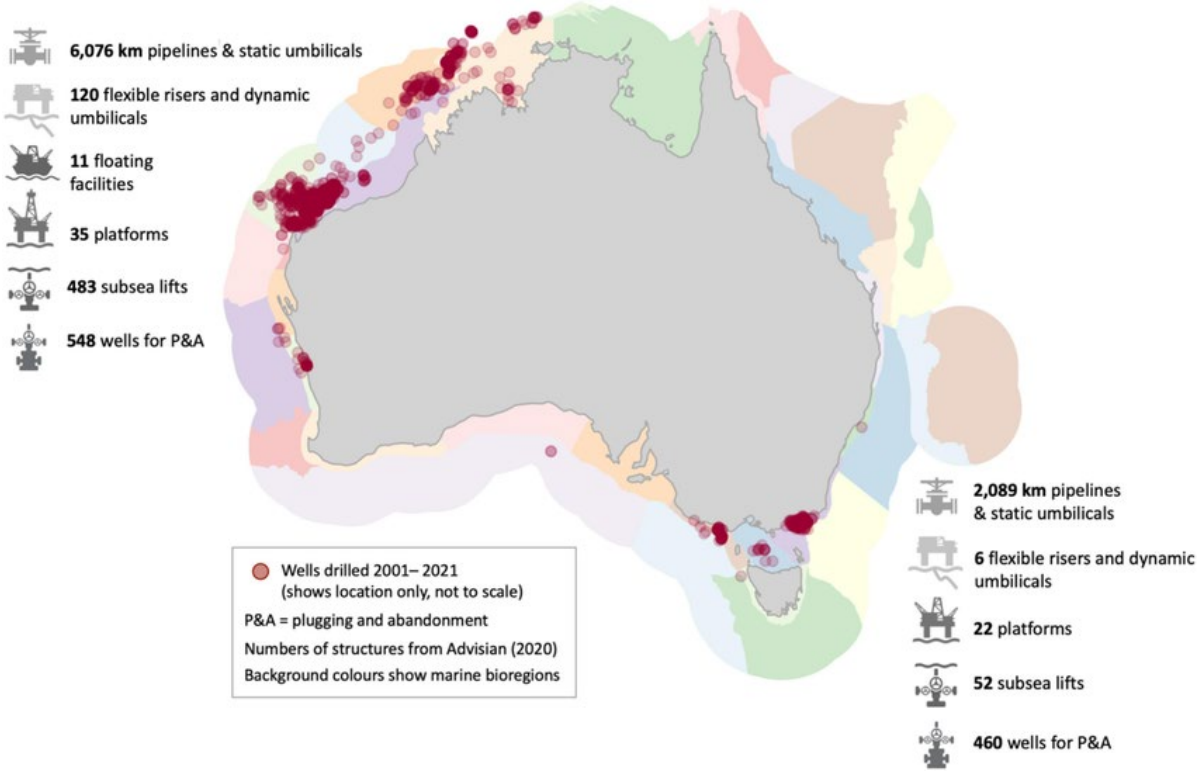


Figure 6: Locations of offshore oil and gas activity in Australia. (17)

A significant modern challenge relates to ensuring that FPIC decisions and related agreements are made with the right Traditional Custodian groups and individuals who hold cultural authority to do so. For example Murujuga Country (in Western Australia) is home to ancient 50,000-year-old petroglyphs that hold extreme cultural significance across a 100,000-ha area covering the Dampier Archipelago, Burrup Peninsula and surrounding Sea Country and the Murujuga Cultural Landscape has recently been accepted onto the World Heritage list. It is also an industrial hub for liquified natural gas resources, production of downstream processing products such as fertilizers and associated industries (e.g. shipping). The Murujuga Aboriginal Corporation is a non-Native Title body corporate that administers contractual obligations in the Burrup and Maitland Industrial Estates Agreement (The BMIEA) on behalf of its members (18). This agreement, established by the Western Australian State Government, grants land and financial benefits to some Murujuga Traditional Custodians in exchange for the surrender of Native Title claims and provision of certainty for future industry development. However, many Murujuga Traditional Custodians dispute the Murujuga Aboriginal Corporation's cultural authority and therefore the validity of any FPIC associated with the BMIEA (19; 20). Further, it is claimed that the BMIEA itself contains

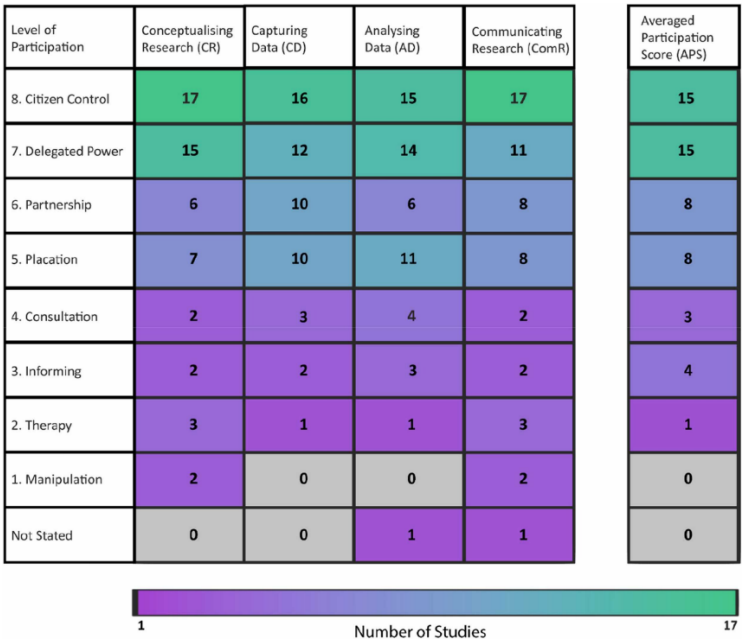
'gag' clauses which prevent Murujuga people from objecting to any projects that are within the scope of anticipated works (21). These concepts conflict with the core inherent principles of FPIC, including the absence of coercion and the maintenance of agency to raise objections and subsequently withdraw consent.

Most Indigenous communities around Australia's coastline still lack direct access to decision-making processes and funding that would allow them to establish the capacity to play a more prominent role in marine science, management, resource development and policy Some research organisations have made headway towards elevating Indigenous leadership in science and Indigenous Knowledge Systems by implementing their own institutional measures. For example, the Western Australian Marine Science Institution (WAMSI) worked with Kimberley saltwater communities to establish protocols and tools to guide WAMSI researchers in the inclusion of Traditional Custodians in the planning and delivery of WAMSI-supported projects (22). Also, the National Environmental Science Program (NESP) has established Indigenous Partnership Principles to be applied across all NESP funded research (23). The Indigenous Partnerships Program established at the Australian Institute of Marine Science (AIMS) positions FPIC and First Nations decision making at the center of its research governance and the conduct of its researchers and supports projects with resources to undertake extensive engagement as required (24). In another example, the Great Barrier Reef Foundation committed 10% ($42M) of the Reef Trust Partnership Funding to engage support Traditional Owners. These and other institutional and sectoral measures provide a sound basis for the future development and adoption of a National Code of Practice for implementing the UNDRIP commitments across the marine science, management and policy sector.

2.3. Collaboration and right-way science

A national study on Indigenous engagement in marine science indicates the challenge for both marine research institutions and Indigenous organisations to work together to improve clarity about engagement expectations (25). The published literature has seen a growing number of cross-cultural collaborations in marine science and several Indigenous and non-Indigenous actors have become advocates promoting the need for a stronger Indigenous voice in western science practices. However, a recent review of 54 marine or coastal studies that used participatory mapping methods assessed each study against Arnstein's ladder of participation, which is a framework for categories of citizen involvement in decision making. It found inconsistencies in the standards of engagement practice used with approximately 30% of studies demonstrating placation (some representation but power remains with authorities) or other degrees of non-participation or tokenism (Figure 7), and over 70% of papers failing to disclose ethics approval, Free Prior and Informed Consent (FPIC) processes, or how the study handled Indigenous Cultural and Intellectual Property (ICIP). Unsurprisingly, the studies with the

highest participatory scores throughout the research cycle were either Indigenous led or were grounded in culturally guided methods (26).



Level of Participation	Conceptualising Research (CR)	Capturing Data (CD)	Analysing Data (AD)	Communicating Research (ComR)	Averaged Participation Score (APS)
8. Citizen Control	17	16	15	17	15
7. Delegated Power	15	12	14	11	15
6. Partnership	6	10	6	8	8
5. Placation	7	10	11	8	8
4. Consultation	2	3	4	2	3
3. Informing	2	2	3	2	4
2. Therapy	3	1	1	3	1
1. Manipulation	2	0	0	2	0
Not Stated	0	0	1	1	0

Figure 7: Number of papers achieving participation levels (against Arnstein's ladder of participation) for each stage of the research cycle. Source: Ferguson et al 2025 (26)

In Australia, the engagement and partnership trajectory we are tracking on lacks the required consistency and maturity around best practices of ethical and equitable partnerships in the marine research, management and industry sector (25; 27). To achieve the vision of an all-of-system approach to empowering Indigenous researchers and incorporating Indigenous Knowledge Systems (IKS) into the Australian marine science agenda, there is a need for improvements in consistent standards in research methodologies, participation and empowerment, data and ICIP management, FPIC processes, and ethics.

While the study depicted in Figure 7 addresses projects that have at least attempted to collaborate with Indigenous scientists, the vast majority of published marine research has not. The literature contains many examples of marine science that would have significantly benefited if only the non-Indigenous researchers had reached out to IKS holders for collaboration. For example, marine conservation planning for the Lord Howe Marine Park fails to recognise and consider Indigenous rights and connections, because the extension of Aboriginal and Torres Strait Islander peoples' interests was naively deemed implausible due to a narrow interpretation of culture being limited to material and tangible cultural evidence. Fortunately, this is being addressed in the current management planning for the Lord Howe Rise, where the existence of cultural values and interests beyond the tangible, such as relational complexities associated with species including migratory species, are being properly considered and included.

2.4. Contribution to Australia's biodiversity targets and international obligations.

Aboriginal and Torres Strait Islander people contribute significantly to achieving Australia's biodiversity targets including the 30x30 targets. First Nations rights and interests are established across 57 per cent of Australia's mainland under various tenures, including Indigenous Protected Areas (IPAs) that will continue to make an integral contribution to meeting the 2030 targets and will be critical in protecting some of the largest intact landscapes across Australia including in some under-represented bioregions. IPAs play a crucial role in biodiversity conservation, habitat restoration, and other land uses, while empowering Indigenous peoples in land stewardship and economic opportunities. IPAs and other land management practices integrate Indigenous traditional knowledge with modern conservation strategies, creating a unique approach to environmental protection (28).

While IPAs are currently concentrated in Australia's terrestrial landscapes, there is increasing interest from First Nation groups for protected areas/ tenure to also be inclusive of the sea and sky. In 2022, IPAs contributed 49.48 percent of the National Reserve System, covering 10.94 per cent of Australia's land area. Extension of this framework into the marine estate with dual acquisition of marine industry (such as fishing) will enable the return to First Nations stewardship of Sea Country, and combined with other approaches (such as Indigenous private protected areas and joint-managed National Parks) will deliver equity and diversity in better protection of under-represented marine ecosystems and bioregions.

3. Dismantling the barriers with radical restructure and new supporting systems

> ***Some things grow because the conditions are right. Others grow despite them.***
> *For too long, First Nations knowledge has endured in harsh policy landscapes, thriving through community strength, not institutional support. Imagine what could flourish if the systems around us chose to embrace that care, instead of resisting it.*

The next National Marine Science Plan must demand nothing less than full and equitable collaboration with Indigenous science perspectives and Indigenous Knowledge Systems (IKS) embedded at every level of decision-making, planning, research, management, policy and governance. Such a revolution will require structural

change to dismantle the many barriers that otherwise will continue to sideline IKS, communities, Indigenous science and First Nations knowledge holders and scientists.

We need to establish Ocean equity and re-conceive the influence given to the different knowledge systems informing management. We can do this by addressing ocean governance and its influence over the compass for Equitable Sustainable Development (Figure 8). Ocean governance needs a transformative shift from a state-centric approach to Ocean stewardship through Oceans-as-commons. This governance approach recognises the ocean as a shared living system—beyond ownership—where responsibility, access, and benefits are collectively held and guided by principles of equity, reciprocity, and care. Such a re-structure is needed to re-assert the re-connected care between humans and the ocean. To do otherwise places our oceans under threat for our future generations.

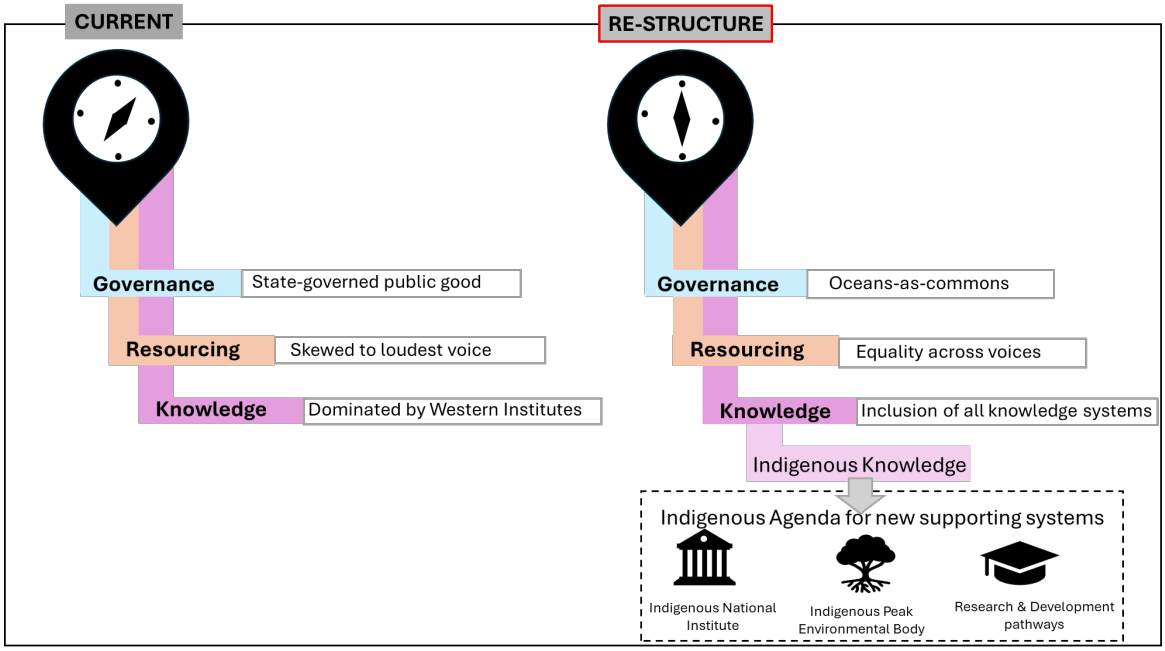


Figure 8: A re-structure to the governance, resourcing and inclusion of knowledge within the management of Australia's marine environment. This includes an Indigenous agenda for new supporting systems.

To address the re-structure of governance, we need new supporting systems. Here we propose the establishment of two new national bodies: a National Aboriginal and Torres Strait Islander Marine Science Institute (NATSIMSI) with regional hubs; and a National Indigenous Peak Body for Sea Country. NATSIMSI will provide a culturally safe and coordinated, Indigenous-led platform for training and empowerment of the next generations of Indigenous marine scientists and custodians, complemented by the Peak Body's coordination and delivery of Indigenous voices from across all states and territories, to help ensure Indigenous voices and their messages are heard in key decision-making forums and are empowered in national policy advocacy. These two institutions will drive reforms and improvements in the recognition and standing of

Indigenous science leadership and Indigenous Knowledge Systems, improve training and development pathways for Indigenous marine practitioners, and create fairer equity in the Blue Economy through Indigenous circular economies.

> ***We don't need to be given a voice; we need space to use the ones we've always had.*** *The path forward isn't about building capacity from nothing. It's about resourcing what already exists in our communities, strengthening it with opportunity, and ensuring our young people can walk into science without leaving culture behind.*

3.1. A National Aboriginal and Torres Strait Islander Marine Science Institute (NATSIMSI)

To meet the urgent challenges facing our oceans we must move beyond consultation to genuine co-leadership with Australia's First Nations marine stewards. The establishment of a National Aboriginal and Torres Strait Islander Marine Science Institute (NATSIMSI) is a necessary step toward achieving this future. NATSIMSI will be much more than an institution; it will be a living network grounded in Indigenous Knowledge Systems, shaped by Country, and led by community.

NATSIMSI will provide a coordinated, Indigenous-led platform for the training and capacity building of Indigenous scientists, and the co-design, co-delivery, and translation of marine research and policy. Regional hubs will ensure responsiveness to local Sea Country priorities while remaining connected through national strategy and governance. These hubs will uphold the principle that knowledge must be held close to the places and people it belongs to, allowing for regional variation, cultural protocol, and the relational obligations that define Indigenous science.

NATSIMSI must also include advanced training and technology facilities — including wet and dry labs, research stations, and education spaces — to host activities such as Sea Country Ranger programs, wildlife rehabilitation training, marine vocational education and cultural capacity uplift for external organisations. These spaces will be made available to universities, research agencies, and communities for collaboration under Indigenous leadership. NATSIMSI will also feed into Indigenous alliances and networks such as the proposed National Indigenous Environment Research Network (NIERN) to strengthen the national research agenda through a rights-based, Indigenous-led community of practice. Together, these platforms will build capacity, embed Indigenous ethics in science education and research methods, and ensure that decision-making reflects the lived, spiritual, and ecological realities of Country and people.

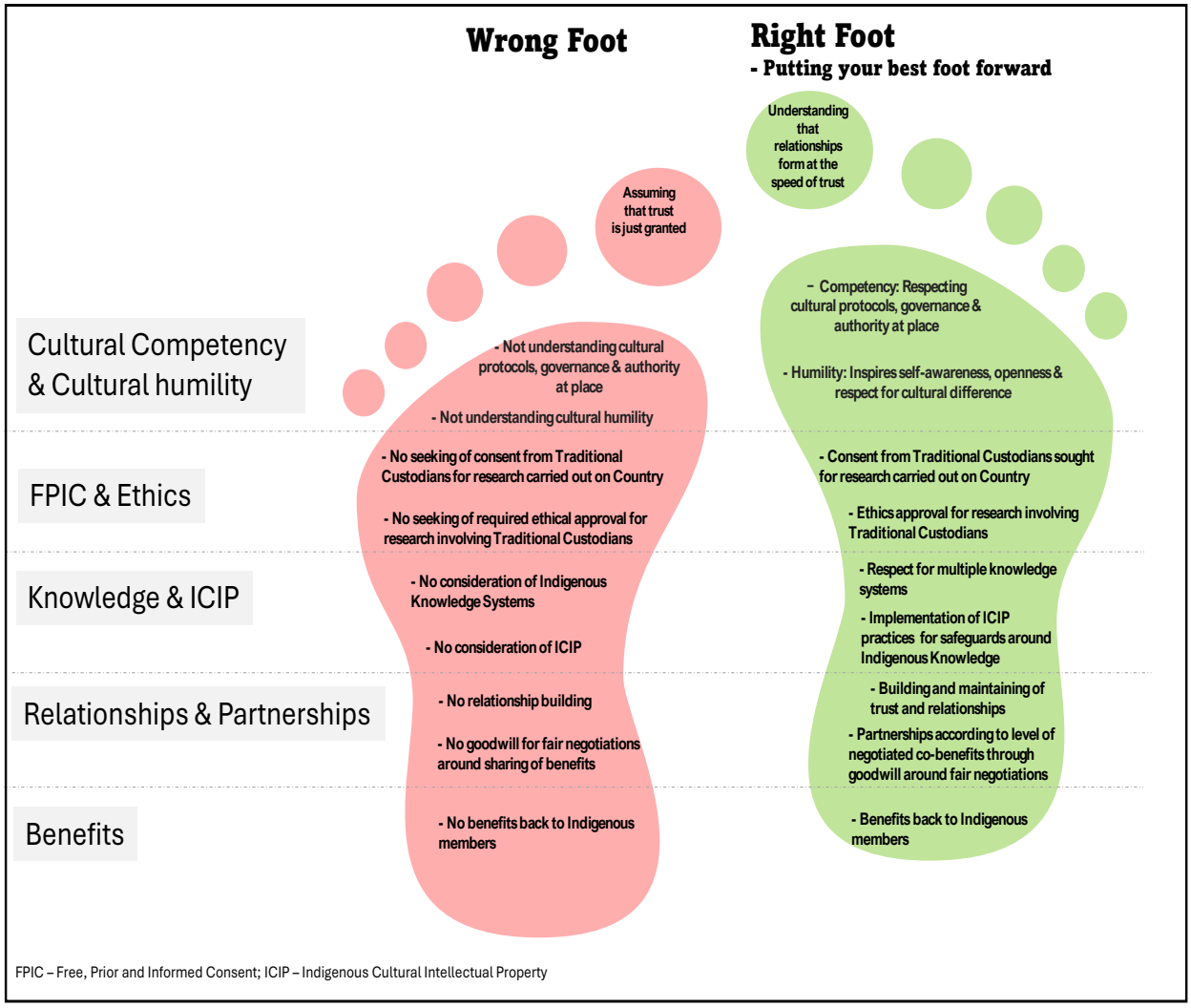


Figure 9: Right and wrong footed benchmarks for equitable participation in Ocean Sustainable Development.

NATSIMSI will support Australia to move towards the UN benchmarks for Indigenous engagement and equitable participation in Ocean Sustainable Development, by helping the marine science sector to engage with Aboriginal and Torres Strait Islander Peoples on the right foot through appropriate ways of building and maintaining relational trust (Figure 9). As a nation, we hit shaky ground when our foundational connections lack culturally appropriate nurturing. The flow on consequence is damage to ethical and inclusive practices across the marine sector. We need more of our marine research and management to be set up around landing on the right foot, not the wrong foot, through the essential personal and resourcing investment into building and nurturing cultural competency and cultural humility (Figure 9). NATSIMSI will establish best practice standards and provide 'right foot' guidance to our non-Indigenous partners. Building the capacity of both Indigenous and non-Indigenous scientists to collaborate and understand each other's knowledge systems is essential. This training could be set up as an income stream for NATSIMSI as cultural capacity uplift is in high demand.

3.2. A National Indigenous Peak Body for Sea Country

While considerable momentum towards a collective Indigenous voice for Sea Country is already occurring through the growing number of regional and issue-specific Indigenous-led alliances such as NAILSMA, SAALSMA, the Aboriginal Sea Company, ReefTO, UMME and the newly formed Sea Country Alliance, there remains an overall fragmentation of effort and inconsistency in resourcing, approach and recognition. A national Indigenous Peak Body for Sea Country is needed to help facilitate a more coordinated approach for Indigenous voices and actions from around our Australian Coastline to be heard and amplified. Such a peak body will help ensure key messages from First Peoples are loud, clear and heard at the marine policy and decision-making tables.

Once established, the National Peak Body for Sea Country will carry the following functions:

- Act as a central coordinating authority for Aboriginal and Torres Strait Islander Sea Country governance across marine and aquatic systems;
- Drive national policy advocacy, co-governance negotiations, and funding strategies with governments and the private sector;
- Guide the implementation of culturally grounded marine management, research, innovation, and restorative development (including aquaculture, fisheries, and habitat recovery);
- Support the re-assertion of Indigenous voices in emerging sectors such as offshore renewable energy, aquaculture, and biodiversity market — where decisions made today will shape Sea Country futures; and
- Contribute into NATSIMSI and national networks such as the proposed National Indigenous Environmental Research Network (NIERN), ensuring Indigenous research priorities clearly include ethics, data sovereignty, and knowledge systems and are foundational in all marine science efforts.

3.3. Recognition and standing of Indigenous science leadership & Indigenous Knowledge Systems.

For thousands of years, Indigenous peoples have developed their own Indigenous Knowledge Systems and methods of discovery across the biocultural land and sea scape. For Australia to do better with recognising Indigenous Science leadership, institutional change led by NATSIMI and the Peak Body is needed along with removing

systemic barriers in western science institutions where western scientific institutions often operate within frameworks that exclude Indigenous knowledge. While learnings from western science relies on peer-reviewed published literature, learnings from Indigenous Knowledge Systems can be found packaged in many different forms including healthy country plans and other forms of 'grey literature' (29). It is important to not overlook the learnings and insight in these forms of science translation, especially when they are authored by Elders, knowledge holders, and experienced Indigenous practitioners with roles outside academic institutions. Oversight by Elders can be argued as one of the highest forms of peer review. The science sector needs a better understanding around the legitimacy of diverse knowledges so that we can have the required confidence in how we critically reflect on the knowledge of others and work with biocultural land and seascapes (29). There are different ways biocultural land and sea scapes and ecological systems are viewed and defined to account for tangible and intangible components.

In Australia, the process of legislative reform and the transition to best practice and culturally grounded management frameworks is incomplete, despite ongoing efforts. Policy reform that implements UNDRIP is required to embed cultural rights, obligations, sovereignty and knowledge custodianship. Eroding and undermining the ability of cultural authority and Traditional Custodians' to influence regulatory power is a process that continues to unintentionally or intentionally ignore the science sector that has the longest environmental conservation and protection record in the world. Regulators, policy makers, and managers hold positions and control the levers that can re-position Indigenous involvement.

Traditional Custodians also continue to face the constant division of their Sea Country through multiple narrow perspectives and agendas through jurisdictional fragmentation and top-down management. This is at odds with Indigenous science and perspectives that view a holistic and inter-connected land, sea and sky scape. For Traditional Custodians, this space is hard to navigate where the division from different pieces of legislation covering one piece of land/water and multiple departments dealing with multiple components creates distractions and complications that prevent Indigenous leadership in bringing learnings, knowledge, and solutions forward. The future of ecosystem-based approaches needs to first learn from First Nations science.

Aboriginal and Torres Straight Island peoples are uniquely impacted by climate change and communities are particularly vulnerable to climate change. Climate change impacts cultural sites, cultural practices, traditional foods, totemic and kin species, which are essential to identity and wellbeing. Involvement in climate research and strategies ensures these cultural values are acknowledged, integrated and protected and that Aboriginal people have a voice in decisions that affect their land and culture.

Full and meaningful participation of Indigenous leadership in decision-making requires reforms to the agency of First Nations through cultural rights, obligations, sovereignty, and knowledge custodianship. A multi-faceted approach is required and is outlined below.

1. **Policies that address legislative shifts**:
    - *Recognising and enacting laws* — Laws that enable the rights within UNDRIP including protection of cultural rights, and laws protecting languages, cultural practices, and Traditional Knowledge.
    - *Enforcing existing rights* — Ensuring that existing human rights laws, including those related to cultural rights, are applied effectively and that Indigenous Peoples have access to legal remedies when their rights are violated.

2. **Policies that re-assert Indigenous knowledge into management frameworks**:
    - *Contributions of Indigenous knowledge* — Standards broadened to include best practices for Indigenous science excellence and governance.
    - *Protocols around respecting Indigenous Knowledge* — Protocols of respecting knowledge that are founded in the worldview of the relationships between people and their Country, and the customs and traditions that enshrine practices.

3. **Policies that enhance community-based initiatives**:
    - *Revitalising languages and cultural practices* — Active promotion of languages and cultural practices by communities through language programs, cultural centres, and community events.
    - *Strengthening Cultural Authority* — Investing in Indigenous-led initiatives and ensure that Indigenous communities have a say in shaping research and policy agendas that impact their knowledge and Country.

4. **Polices that embed collaboration within government, agencies and research organisations**:
    - *Collaborating on research and knowledge sharing* — Best standards around working together while also ensuring that Indigenous peoples retain control over their knowledge so that research is relevant to Indigenous communities while ensuring that Indigenous peoples are involved in the research process.
    - *Negotiated agreements and contracts* — Negotiation of agreements with developers, researchers, and other organisations to ensure that their cultural rights and interests are respected and there is a fair distribution of benefits.

5. **Policies for upholding Indigenous Data Sovereignty**:

- *Implementing Data Governance Systems* — Clear mechanisms for sharing TEK/IKS between Indigenous communities, researchers, and policymakers are needed to protect ICIP, maintain Data Sovereignty and provide capacity building initiatives to empower Indigenous communities in managing their own knowledge.
- *Benefit Sharing* — Establishing mechanisms for knowledge sharing and benefit sharing so Indigenous communities receive fair and equitable benefits from the use of their cultural knowledges, including economic and social benefits.

3.4. Improved pathways for Indigenous marine scientists and practitioners

The marine science, management and policy sector will benefit significantly through increased engagement and participation of First Nation Australians. However, according to the Productivity Commissions 'Closing the Gap' data, Australian education systems are not meeting targets required to support Aboriginal and Torres Strait Islander people to reach their learning potential and participate in the higher education sector. While there has been year-on-year improvement, the overall trajectory is insufficient to meet the 2031 targets set within the Closing the Gap agenda and continue to fall below the standards enjoyed by non-Indigenous Australians (*Figure 10*).

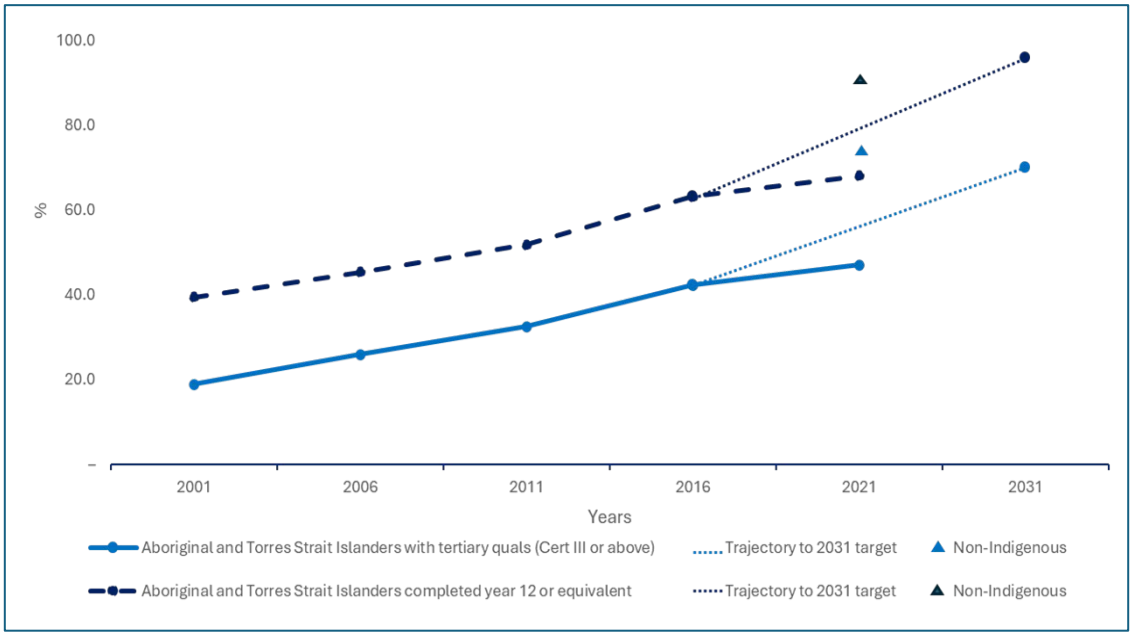


Figure 10: The percent of Aboriginal and Torres Strait Islander people (20-24yrs) completed year 12 (or equivalent) or (25-34 yrs) obtained a tertiary qualification (Cert III or above), compared to 2031 Closing the Gap targets and equivalent percentages of non-Indigenous people. Data source: Productivity Commission (30).

NATSIMSI can play a crucial role in dismantling the many structural barriers that continue to inhibit First Nation scholars in achieving their full education potential,

including remoteness, economic security, marginalisation, access to information and lack of recognition of Traditional Knowledge systems and trans-generational traditional education systems. Further, education curricula and systems must better embrace Indigenous pedagogies to support success in Indigenous scholarship, by emphasising hands-on, relational and community centred learning including storytelling, Country-based learning and real-world skill development (31).

Most non-Indigenous teenagers with aspirations to become marine scientists are familiar with the pathway depicted in the orange circles in Figure 5 – excel at high school and gain direct entry to university. However, for the reasons outlined above, such a pathway is inaccessible to many young Indigenous people who may find vocational and other forms of training more accessible. In reality, many vocational Certificate III and IV qualifications are eminently suitable for marine science related careers.

For those that wish to transition to formal university study, many universities now offer bridging courses to help Certificate III and IV graduates cross-over to bachelor's degree studies, where this meets their aspirations. While there are examples of young Indigenous scholars who have taken this pathway, there is a need to increase community knowledge about how to access it. However, for those that do achieve a Bachelor level degree, progression to higher degree research training is hindered by a significant financial barrier. The Australian Postgraduate Award could be improved through providing a liveable graduate salary.

Some marine science or management roles sought by First Nation Australians may not require the completion of a whole certificate course, but rather a subset of skills, or micro-credential, to enable performance of a certain activity. For example, the marine monitoring units being developed within the Northern Australian Marine Monitoring Alliance (NAMMA) are sufficient to conduct sub-tidal monitoring from a small vessel or platform without necessarily completing an entire Certificate III course (10). Figure 11 depicts this complex multi-level matrix of education opportunity, including the all-important feedback loop to community so role models in professional marine science and related roles can provide inspiration for upcoming generations.

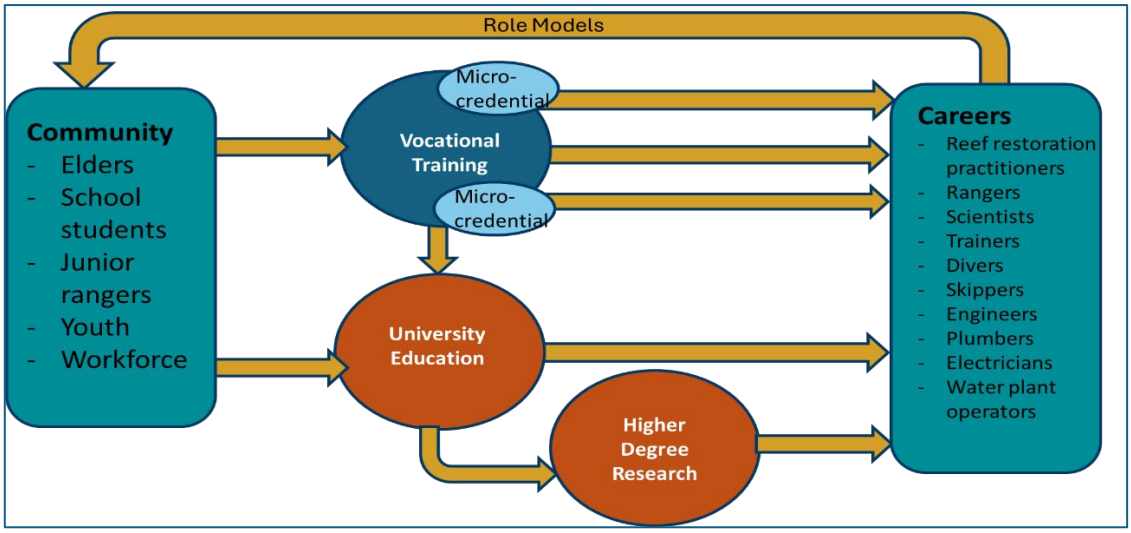


Figure 11: Education matrix for Indigenous marine science, management and related careers. Adapted from Ivey et al, 2024 (32)..

Apart from formal tertiary education pathways, many First Nation Australians receive Country-centred cultural education from holders of vast Traditional Knowledge who continue the traditional of trans-generation knowledge transfer using Indigenous Knowledge Systems (IKS). Structural reforms that bring IKS into the scope of academia and higher research education recognition are needed. Mechanisms such as recognition of Traditional Knowledge holders as the equivalent status in the academic system (e.g., Professors), systems that incorporate cultural knowledge into degree curricular via recognition of prior learning systems, and granting of research awards for practitioners of IKS to lead culturally appropriate research will help achieve this.

3.5. Enabled Aboriginal and Torres Strait Islander Circular Economies in the Blue Economy

Australia's investment in the emerging Blue Economy — encompassing sustainable use of ocean resources for economic growth, improved livelihoods, and ocean ecosystem health — reflects a global movement towards marine-based ecological and economic resilience. The foundational principles of the Blue Economy are not new to Aboriginal and Torres Strait Islander Peoples who for millennia have practiced complex systems of marine management and governance grounded in kinship obligations, seasonal knowledge, and cultural reciprocity. These systems represent some of the oldest and most enduring socio-ecological marine economies on Earth.

Despite this deep expertise and custodianship, Indigenous peoples remain largely marginalised in the policy design, decision-making, and governance of Australia's Blue Economy. Initiatives often prioritise economic or ecological outcomes without ensuring alignment with Indigenous cultural frameworks. This leads to culturally unaccountable

projects which incorporate the following attributes that replicate historical patterns of exclusion and dispossession.

- **Cultural Displacement**: Blue Economy projects that extract or commodify cultural knowledge without consent — or that displace Traditional Custodians from meaningful participation, reinforcing colonisation and ongoing dispossession.
- **Individualised Economic Incentives**: When marine economic benefits are narrowly distributed to individuals rather than through collective, community-led governance structures, the result is fragmentation of social cohesion and deepening of intra-community inequalities.
- **'Blak Cladding'**: A growing number of non-Indigenous businesses misrepresent themselves as Indigenous-owned in order to access government marine procurement contracts or Blue Economy partnerships. This practice undermines the legitimacy of Indigenous enterprises, erodes trust, and diverts investment away from genuine community benefit.
- **Extractive Greenwashing**: Without strong cultural governance frameworks, Blue Economy projects can perpetuate extractive models under the guise of sustainability, effectively using environmental rhetoric to justify ongoing exploitation of Sea Country.

This structural exclusion of First Nations Australians risks social cohesion, cultural integrity, and environmental justice. If left unchecked, Australia's Blue Economy policies risk replicating the harms of previous development paradigms — undermining both ecological outcomes and Indigenous rights. For example, benefit sharing in marine resources with Indigenous fishers should recognise and support the rights and interests of Aboriginal and Torres Strait Islander peoples in accessing and using marine resources, particularly for customary fishing and economic development. This includes agreements that recognise the traditional use of marine resources, promote sustainable fishing practices, and promote sustainable use of key species and ecosystems by incorporating cultural lore and contemporary science. .

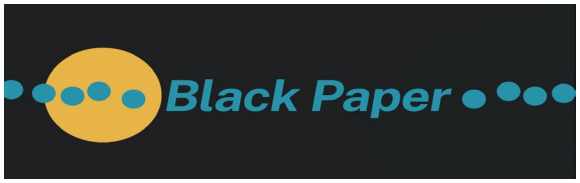
Right now, there is a critical opportunity to re-centre Indigenous governance, equity, and cultural authority into the design and implementation of Australia's marine economic future. To unlock the full potential of Indigenous-led Blue Economy futures in Australia, structural reform of existing frameworks and institutional practices are needed to enable genuine self-determination, cultural accountability, and long-term economic justice (see section 3.3 around policy reform points). This requires investment into Indigenous incubators and culturally grounded business models that allow for communities to develop Blue Economy activities on their own terms.

3.6. Rebalancing goals and priorities

Establishing new standards for responsible sustainable development requires being accountable to legitimate equitable equalising between humans, the environment, and the economy so that profit is not the top driver (see Figure 1). In Australia, we cannot sit on our hands and simply wish for more responsible sustainable development. Interventions are needed that are powerful enough to tackle unbalanced regimes and ensure future generations can meet their needs. One powerful intervention is the power of people and their voice and rights, as this influences and impacts behaviours, actions, business, and markets. Right now, Indigenous groups are seeking to establish influence over responsible development agendas by issuing moral, legal and cultural challenges.

Our nation and planet need courageous leadership to re-correct the path of sustainable ocean development. Previously, Australia has not consistently met best practice standards of ethical and equitable standards for marine science engagement and collaborations with Indigenous scientists. To improve, we need to move from transactional behaviours to transformative behaviours that build relationships around ethical and equitable partnerships (27). The proposed NATSIMSI and Peak Body can help drive this reform.

Strategies for sustainable development of our Oceans fall short if the plan does not include interventions that challenge the notion of exponential and exploitative growth and meet the expectations of equitable equalising and co-benefits models. Demands are placed on extractive industries to re-think the profit driven model, as the goal posts of corporate responsibility are firming up around more ethical and equitable approaches. Primarily financial motives are causing disconnection to Country, people and planet. Industry leaders are called upon to drive co-benefit transformation and renew awareness in fairness and equity as an ethical and sustainable cornerstone of building a more equitable Blue Economy. It also requires Oceans to be managed through, Oceans-as-commons, where commons management requires a commitment to equitable access, use and sustainability across sectors and communities. During the process of industrialisation, the commons has gradually and systemically been replaced by either private ownership or public goods owned or controlled by State. There needs to be a paradigm shift back to Oceans-as-commons by reconfiguring authority to restore Oceans-as-commons and re-assert the centrality of stewardship and the culture of the backbone to responsible development.



4. Key recommendations and progress metrics

The following table summarises the key recommendations made throughout this paper, and proposed progress metrics to measure progress over the first 5 years of the next National Marine Science Plan 2025-2035.

Recommendation	Section in this paper	Progress Metrics 0-5 years
Recommendation 1: Establish a National Aboriginal and Torres Strait Islander Marine Science Institute (NATSIMSI) with regional hubs, incorporating a National Indigenous Environmental Research Network (NIERN), to create a culturally safe space for Indigenous-led marine science research; embed Indigenous Knowledge Systems into marine research, training and governance; facilitate respectful and cultural partnerships with training and governance; and establish best practice standards for equitable partnership structures, appropriate research methodologies, ICIP management, FPIC processes and research ethics.	3.1	• Commonwealth and State government resource commitments secured to establish NIERN and NATSIMSI. • Infrastructure (building, locations, etc) in the establishment of Indigenous-led marine science and education. • More right-footed marine science engagements and partnerships with First Nations scientists and organisations are resourced and delivered through investment into education and training around best practices. • National best practice standards are established for equitable partnership structures, appropriate research methodologies, ICIP management, FPIC processes and research ethics, and an increase in the researchers and organisations that have adopted them, evidenced through an increase in peer-reviewed publications that demonstrate best practice standards.
Recommendation 2: Establish a National Indigenous Sea Country Peak Body to support First Nations governance, voice and influence in the marine science, research, policy and management sectors.	3.2	• A network created between existing Indigenous Alliances and groups. • Structure, mandate, governance, membership, and representation determined through inclusive national dialogue.

Recommendation	Section in this paper	Progress Metrics 0-5 years
		• Foundational investment secured to support convening, secretariat, legal structure and capacity building. • Increased First Nations representation at all levels of decision making in setting agendas for marine science, research, policy and management.
Recommendation 3: Implement UNDRIP in Australia. Reform policy, legal and regulatory frameworks and investment to deliver the Indigenous cultural rights, obligations, sovereignty and knowledge custodianship outlined in UNDRIP, including the rightful standing of Indigenous Knowledge Systems, scientists and knowledge holders alongside their western science counterparts, and upholding the principle of Free, Prior, and Informed Consent in both policy and practice.	3.3	• Progress in delivering the action plan recommended by the 2023 Senate Inquiry into implementing UNDRIP. • Increased number of legislative instruments and sectoral policies and codes of practice that recognise First Nations rights outlined in UNDRIP, including decision making authority and FPIC processes. • Standards that recognise the difference between rightsholders and stakeholders that re-orientates the implementation to specific principles guiding the ethical and equitable relationships with Traditional Custodians. Increase the number of Indigenous scientists and knowledge holders recognised for their contribution to marine science in prestigious awards in open categories as well as dedicated Indigenous categories (e.g., Prime Minister's science prize). • Investment into improved agreement making with Traditional Custodians based around supporting best practice models of partnership.
Recommendation 4: Expand and strengthen Indigenous Rangers and IPA programs in Sea Country with longer-term funding, stronger cultural authority and compliance powers, and resources to address skills needs in areas prioritised by Rangers.	2.1	• Increase in the numbers of Indigenous Rangers and IPAs that have secured 10 year+ funding commitments. • Increase in the number of Sea Country IPAs. • Increase in the number of Indigenous Rangers with compliance powers relevant to their area of operation.

Recommendation	Section in this paper	Progress Metrics 0-5 years
		• Increase the number of Indigenous Rangers being fully equipped, with resources, skills, training and partnerships (where necessary), to meet their aspirations for Sea Country stewardship.
Recommendation 5: Improve and deliver appropriate education pathways across the full matrix of educational levels and systems (cultural, school, vocational, university, higher degrees) for Indigenous marine scientists and practitioners to obtain appropriate skillsets and reach their potential.	3.4	• Increased Indigenous scholar participation at all levels in the matrix (*Figure 11*). • A portfolio of Indigenous-led projects in responsible sustainable development.
Recommendation 6: Structural reform of Blue Economy frameworks and institutional practices and creation of dedicated funding instruments to enable Indigenous equity participation, self-determination, cultural accountability and long-term economic justice.	3.5	• Implementation of cultural governance assessments and standards of FPIC and genuine co-design improvements in all Blue Economy initiatives that impact Indigenous land and sea. • Improved and accountable procurement standards with penalties for non-compliance, lead to elimination of 'blak cladding'. • Increased number of Blue Economy projects with Indigenous equity and participation. • A growing cohort of Indigenous knowledge brokers acting as cultural intermediaries in negotiating Blue Economy projects and partnership terms. • New outcome metrics for the nature repair market that demonstrate the cultural value chain that values cultural, spiritual and community health outcomes tied to Indigenous stewardship. • Majority of the nature repair market overseen and managed by Indigenous organisations.

5. Dependencies and priorities

This **Black Paper** is a blueprint that shifts the paradigm to achieve structural reform in the marine science sector. Our vision is for audacious collective leadership which includes First Nations involvement at all levels of decision making, to deliver authentically sustainable and equitable marine research, policy, management and development. The following key outcomes are achievable but interdependent on delivery of each of the recommendations outlined in the table above and depicted in Figure 12.

Key Outcomes:

- National infrastructure for Indigenous led marine science and education.
- Safe, respectful research environments and knowledge protection.
- A stronger and coordinated National First Nations voice in Sea Country governance and decision making at all levels.
- The rights of Indigenous people as decision makers, including through FPIC processes, are recognised in law.
- Cultural lore enforcement, and training and employment pathways for leadership in First Nations marine stewardship.
- Culturally anchored economic development and benefit sharing in the Blue Economy, with First Nations equity, participation, self-determination, cultural accountability and long-term economic justice.
- The Indigenous Ranger sector is resourced and supported to achieve its full potential with the right skills and partnerships (including Indigenous-led partnerships with research organisations if needed).
- Non-Indigenous researchers and research organisations increase their cross-cultural competency and practice higher standards in research methods, Indigenous partnerships, ICIP management, FPIC processes and ethics.
- First Nations marine stewardship is widely recognised and celebrated.

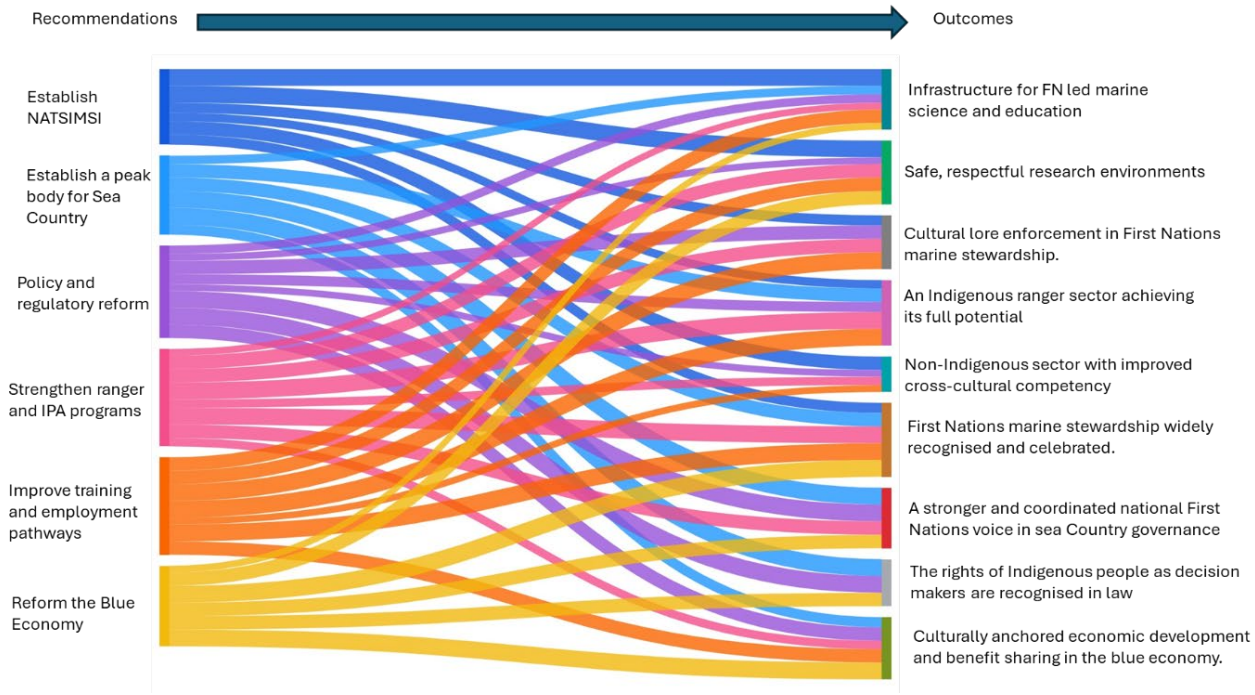


Figure 12: Inter-dependencies between recommendations and achieving key outcomes.

6. Concluding statement - Flipping the Tide

This **Black Paper** calls for a whole system change piece that flips the tidal flow of Ocean governance, embeds guiding principles and frameworks to rebalance decision-making hierarchies, and activates education in supporting courageous leadership to drive the necessary transformation in our collective compass direction. In this modern era, the compass guiding sustainable ocean development remains in the hands of many sectors and processes that continue to sideline the ancient wisdom and experience of Traditional Custodianship practices. Our compass direction needs re-positioning around co-benefit arrangements for people and planet. Our recommendations strive to pivot our compass around equitable co-benefits across people, planet and profit, and place the leadership of Traditional Custodians at the helm to steer a new course towards a new beat of the sustainable drum. We call on our nation and especially our marine science colleagues across all sectors to get on board and support us to achieve these changes.

> ***Our progress over the next decade isn't a destination, it's a turning point.***
> *The question is not whether First Nations science belongs in the future of marine stewardship, it's whether the systems around it are ready to catch up. What we choose now will shape not only the health of our oceans, but the kind of country we become.*

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