

COMMENTARY

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Research to Relevance: Reflections From Marine PhD Candidates Seeking Impact on Policy and Practice

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Abstract

Many Doctor of Philosophy (PhD) candidates in marine science are driven by a desire to create impact through their research in the form of meaningful, real-world change. However, the journey from “research to relevance” is often complex and uncertain, especially within inter and transdisciplinary contexts where traditional academic pathways and training may not provide adequate preparation or support. In this commentary, we bring together a series of personal vignettes from PhD candidates (i.e., the authors) working across diverse marine systems and contexts, reflecting on our efforts to embed policy engagement and impact into our research during doctoral training. These vignettes focus on personal and lived experiences, drawing on our experiential knowledge gained through navigating the challenges of stakeholder engagement, policy influence, and institutional constraints. Rather than abstract theorising, we offer grounded insights into the emotional, relational, and practical dimensions of striving for impact during doctoral training. Building on these reflections, we collaboratively synthesised our insights and outlined concrete strategies for embedding policy impact into research training and highlighted how doctoral supervisors, academic institutions, research partners, and funding bodies can better support PhD students in their pursuits. By sharing our experiences and lessons learned, we aim to empower the next generation of marine researchers to more confidently pursue research that is both academically rigorous and socially relevant.

Keywords

experiential knowledge; marine science; PhD challenges; PhD support; research impact; transdisciplinary training

1. Introduction

The future of our world's marine systems is increasingly uncertain. Rapid environmental degradation is outpacing the rate at which durable solutions emerge from research. This pressure has contributed to growing calls for marine science to produce evidence-informed, actionable, policy-relevant knowledge through participatory approaches and transdisciplinary collaboration (Karcher et al., 2022). Marine researchers are, therefore, increasingly expected to go beyond simply understanding the world to helping change it.

As PhD candidates, we feel this expectation acutely. We are motivated by this urgency and personal desire for our research to have meaningful, real-world impact outside of academia. Moreover, while we are well positioned to identify emerging problems and opportunities, we are still building the professional credibility and networks required to influence them. However, there is little guidance from peers on how to do so, even though commonalities with our experiences can provide powerful peer-to-peer learning. Thus, these tensions bring us together to write this commentary.

We are a diverse group of marine science PhD candidates from James Cook University, Australia, with different research disciplines, career stages, and cultural backgrounds (see Supplementary File on authors' positionality statements). While we do not write as established authorities on research impact, what we offer are *our* stories—raw and grounded reflections on the emotional, relational, and practical dimensions of striving for relevance. As such, we write this commentary from a place of solidarity and reassurance that these tensions are not simply individual shortcomings but are also shaped by the broader structural features of doctoral training.

This commentary was developed by collaboratively synthesising personal vignettes about our lived experiences of striving for research impact. Our key lesson from this process was that no matter how impact is defined, sustained relationships are the most consistent pathway to impact (Cvitanovic et al., 2021). We then used excerpts from our vignettes to illustrate our common challenges (method in Supplementary File) and conclude with practical guidance for fellow PhD candidates and supervisors, academic institutions, partners, and funding bodies that seek to support our research to relevance journey (Figure 1).

2. Challenges

2.1. Structural Barriers: PhD Timelines, Funding Models, and Academic Incentives

Varsha Balu writes:

When I started this PhD in an area that was unfamiliar to me, my motivations stemmed from wanting to have more impact with my work. Yet, somewhere along the way, under the weight of deadlines, milestones, and constant troubleshooting, I often lost sight of that broader vision.

To ensure steady progress over time, PhD programs are structured around formal administrative requirements that are meant to give an otherwise flexible program its structure. However, in our experience, we found that they are often poorly aligned with the processes that enable research impact. For example, one of us noted that much of their study design had to be developed before meaningful field engagement due to “institutional pressures, limited funding, and confirmation timelines.” A few others described having to shorten environmental monitoring periods and reduce industry consultation and co-design for the same reasons. As a result, engaging with end-users from the beginning of the research process can be difficult to implement fully. This tension can lead to frustration, particularly when we enter our PhDs motivated by the desire to produce impactful and industry-relevant work.

These structural pressures intersect with broader academic incentive systems that prioritise outputs such as publications. While these outputs are important indicators of academic success, they do not always align with the slower, relational, and adaptive processes through which research impact often emerges. Enabling impactful research may therefore require institutional changes that better incentivise collaboration and knowledge exchange alongside traditional academic outputs (Evans & Cvitanovic, 2018).

2.2. Uncertainty and Limited Support for Adaptive Research

Tara Abrina writes:

When I look back on my ten years of experience as a policy researcher, I realise that despite these uncertainties, decisions are still made....We must recognise that uncertainty is and always has been a feature rather than a failure in environmental management and planning.

At the beginning of the PhD, most candidates are encouraged to focus on conducting literature reviews and writing proposals, signalling the need to prioritise early project specification and linear progress. However, those of us at the end of our PhD programs found that our projects evolved substantially from our original proposals, and that even the most well-designed research plans could not fully anticipate real-world challenges and shifting conditions. The complexity and dynamism of governance systems, perspectives, or environmental conditions only become apparent after extended engagement. Uncertainty is thus inherent in research-based decision-making, particularly in inter and transdisciplinary contexts.

Impactful research, then, is rarely linear; it requires iteration, adaptation, and humility. Equipping PhD candidates for such conditions requires training that normalises “failure” (Cvitanovic et al., 2022)—one that is rarely fostered in formal education settings. Even PhD candidates with prior professional experience may default to minimising uncertainty in their work. However, we found that when researchers are humble and open about the limits of their knowledge with partners and stakeholders, it levels the space for co-design and enables collaborative problem-solving (Brugnach et al., 2021; Cvitanovic et al., 2021).

2.3. Relationships Are the Foundation of Impact

Rakesh Chandra writes:

The journey started in villages where formal processes rarely capture the true depth of people’s experiences....I used Talanoa [a Pacific islander’s way of talking and telling stories], traditional

protocols, and informal conversations. I sat with community members in spaces where they feel comfortable: verandas, cooking shelters, community halls, under trees. We talked about everyday life before touching on project issues.

Across our vignettes, one of the strongest shared insights was that relationships are the foundation of research impact. For us, this also means ensuring relational equity: paying attention not only to what research is about, but how it is conducted, with whom, and on whose terms. For several of us conducting community-based research, talking about everyday life was not peripheral to the work; it created the conditions under which meaningful data could be collected. Similarly, those of us working with aquaculture partners spent extended time on their farms, learning to sample and cultivate fish according to their knowledge, routines, and preferences.

Relational equity thus asks us to be humble, pay attention, and be present often, not only when the data is needed, but regularly over time. However, we found that such sustained engagement was not always feasible with the constraints outlined in the previous sections. Despite our best intentions, some of our projects became more consultative than co-designed, which had clear negative implications for research impact. As PhD candidates seeking research relevance through relationships and relational equity, we challenge the “deficit model” of knowledge transfer, where scientists produce knowledge and others consume it (Cvitanovic et al., 2015). If knowledge can be co-produced rather than delivered, so should impact.

2.4. Epistemic and Institutional Power Shape How Impact Is Defined

Rayhan Dudayev writes:

My grandmother...was an intelligent woman....Her knowledge and wisdom came from life experience....Yet in a meritocratic society, where formal education often defines legitimacy, someone like my grandmother is rarely seen as an intellectual. This is the challenge that brings me to my research: who is recognised as a knowledge holder in marine policy-making?

Before encountering practical barriers to forming meaningful relationships or navigating uncertainty, some of us first had to confront a more fundamental issue. We saw how different knowledge systems, and thus, different definitions of impact, were not always treated equally. For example, three of us working with Indigenous and small-scale communities in Fiji and Indonesia observed that locally grounded understandings of stewardship, reciprocity, and human–environment relationships did not easily align with technocratic conservation framings. For those of us connected to the Global South, this dynamic was not only visible in communities but also in ourselves, as some of our own lived understandings did not always align with dominant scientific frameworks.

Moreover, we found that these asymmetries were reinforced by disciplinary boundaries that shape our training. For example, those of us focused on technical improvements in aquaculture productivity or fisheries decision-support tools found that our work translated more readily into recognised “impact,” attracting industry interest, funding, or being more easily incorporated into policy and management frameworks. By contrast, those of us working on recognising Indigenous knowledge or reshaping conservation relationships often struggled to demonstrate value within the same systems (Champion & Strand, 2025).

Writing this commentary made us realise that we were not always taught to leverage synergies among these different perspectives. This might explain why some of us struggle with valuing our worth and work as researchers, as we explain in the next section.

2.5. Personal Growth Is Impact, Too

Roy Barkan writes:

Through sustained effort, curiosity, and the exceptional support of my supervisors and mentors, I developed deep competence in both domains and achieved outcomes I once thought impossible....While the scientific impact of my work is significant, the personal growth...has been even more transformative.

While research impact is typically measured through outputs such as publications, policy uptake, or innovation, we found that some of the most consequential impacts of doctoral research are not immediately visible in these forms. Personal and professional growth during the PhD directly shapes us, yet is rarely captured within conventional metrics. This suggests that prevailing evaluation frameworks overlook forms of impact that are embodied, challenging to measure, and unfold unevenly over time.

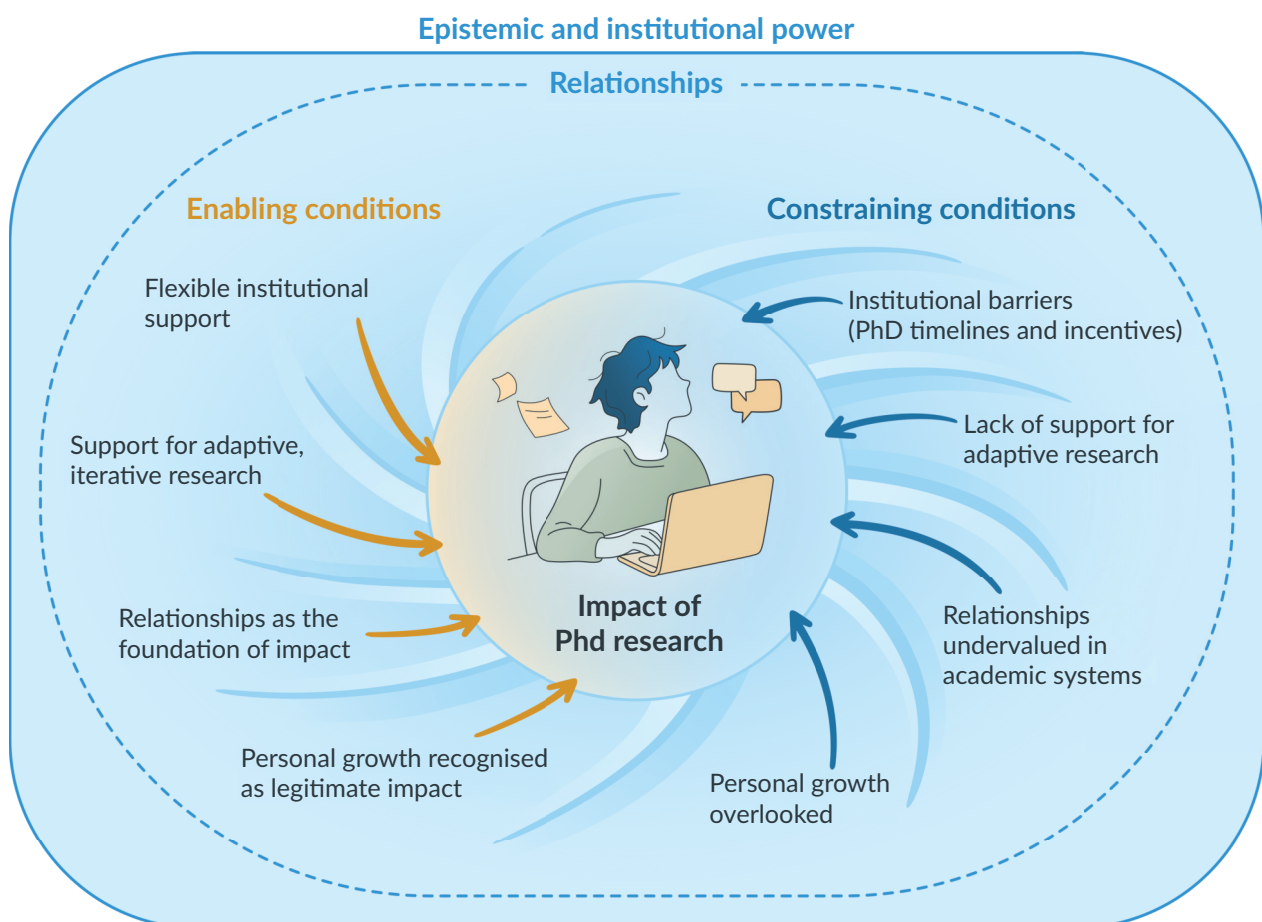


Figure 1. Enabling and constraining conditions of impact in PhD research.

Across our vignettes, it was clear that this internal growth is not abstract but grounded in specific capabilities developed through practice. These capabilities, once sharpened by the aforementioned limitations, directly influenced how we conducted our research. They also prompted us to understand impact as something that emerges through trust and iteration. In some cases, this meant prioritising relational approaches over academic novelty under significant logistical and institutional constraints.

The significance of this personal growth lies in how it shapes future impact. Everything we developed during doctoral training will not remain confined to our PhD projects but will create ripple effects throughout our careers. Recognising personal growth as foundational, therefore, requires expanding how impact itself is understood—not only in terms of research output, but also in how it transforms us as researchers, and, in turn, how those transformations shape the systems we continue to work within.

3. Considerations for Enabling Impact Across the Research System

3.1. To Our Fellow PhD Candidates

Congratulations on starting your research on the relevance journey. We hope that this commentary has been insightful. While some of us may yet have the skills or contacts to engage with potential research partners, we assure you that there are many opportunities out there. What is important is that you build the relational and communication skills to be ready for those opportunities and the variety of audiences you intend to reach with your work.

Expect and embrace uncertainty. It is normal for your project to change often. Connect with your peers and know that you are not alone. Work closely with your supervisors to develop the capacity to navigate uncertainty, constraints, and failure. Keep an eye out for real-world decisions when they are made and observe intently. Ask: What would I have done in that situation?

Lastly, celebrate the process and the joy of learning. Research outputs may have their merits, but they are simply receipts to show that you worked on your own growth. You have more time than you think; your PhD project is just the beginning!

3.2. To Our Supervisors Who Enable Impactful Work

You play a critical role in shaping what kinds of impact are possible during doctoral training—not just guiding research design and academic outputs, but mediating access to networks, modelling our professional judgment, and helping us to navigate uncertainty. Thank you for taking a professional risk and actively embedding us within your existing professional and policy networks. This experience allows us to observe how experienced researchers engage and collaborate with people from different fields, approach complex problems despite incomplete information, and balance rigour with deadlines. By supporting and helping us navigate the inherent uncertainties in research and fostering a safe, creative, and adaptive research process, you enable transformative research with lessons that we carry with us throughout our careers.

3.3. For the Academic Institutions That Structure Our Research Training

Thank you for providing most of us with structured access to training and professional networks. However, we call for the development of cross-disciplinary opportunities alongside more targeted support for different fields, including marine social science, and building connections not only with industry and government, but also with NGOs, communities, and other partners involved in governance. It should also include more impact-oriented events, such as impact monitoring and co-design workshops. We call for streamlining administrative requirements so that they are easy to navigate and responsive to the realities of impact-oriented research.

3.4. For Our Partners Who Enrich Our Research Design

As industry, government, NGO, and community partners, you are critical to shaping the relevance and direction of doctoral research by bringing practical priorities, situated knowledge, and real-world constraints into the research process. We have seen the impact our work can have when our partners integrate engagement into the research and development aspect of their business plans. Thank you for seeing the value of building trust with us and doing the work of meeting us halfway. Please continue to engage with us as collaborators rather than end-users.

3.5. For the Funding Bodies That Orchestrate the Research Landscape

Funding bodies shape the conditions under which research impact becomes possible, including whether doctoral projects can be adaptive, participatory, and ultimately relevant beyond academic outputs. Thank you for investing in us and enabling engagement, co-production, and reflexivity in our research. It is important for us to feel that the time and effort required for relationship-building and transdisciplinary approaches are accounted for by those who support our work. Being transparent about regional, thematic, and strategic priorities would help us align our projects with broader development goals. We look forward to seeing funding bodies set the tone for the research landscape and take the lead in how impact is evaluated beyond traditional metrics.

4. Conclusion

In this commentary on research to relevance, we reflected on what impact means to the entire marine science community, our own PhD journeys to research relevance, and the constraining challenges and enabling conditions that shape this process. We write this to reassure our fellow marine science PhD candidates that these challenges are not individual shortcomings alone but a shared responsibility. We write this for the supervisors, universities, research partners, and funding bodies that enable our research to matter to the broader community. Finally, we write to our future selves, for the day we inherit responsibility for these marine systems.

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Conflict of Interests

In this article, editorial decisions were undertaken by Annette Breckwoldt (Leibniz Centre for Tropical Marine Research), Asha de Vos (Oceanswell/University of Western Australia Oceans Institute), Leonie Dziomba (Leibniz Centre for Tropical Marine Research), Shannon McLaughlin (Wageningen University), Salanieta Kitolelei (Leibniz Centre for Tropical Marine Research/University of the South Pacific), Sangeeta Mangubhai (Talanoa Consulting), and Denis Karcher (Royal Swedish Academy of Sciences).

LLMs Disclosure

The authors used ChatGPT-5 to check for grammatical errors.

Supplementary Material

Supplementary material for this article is available online in the format provided by the author (unedited).

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About the Authors



Tara Abrina is currently a 2nd-year PhD candidate at the College of Science and Engineering, James Cook University, Australia. Her research explores bioeconomic models for policy analysis that work with limited data, using stakeholders' relational information to contextualise model uncertainties and enhance interpretation. Tara is from the Philippines.



Tom Gammage is a marine social scientist and conservation practitioner with 10 years' experience in community-based fisheries management, partnerships, and policy across the Indo-Pacific. Currently completing a PhD at James Cook University on equity in marine conservation co-management in Indonesia, he works at the interface of science, policy, and practice.



Varsha V. Balu is completing her PhD at James Cook University as part of the Australian Research Council's Industrial Transformation Research Hub. Her research focuses on developing genetic and proteomic tools for aquatic animal disease surveillance, working closely with industry to improve early pathogen detection and support sustainable aquaculture.



Roy Barkan recently completed his PhD at James Cook University within the College of Science and Engineering, where he focused on decoding the genetic basis of thermal stress tolerance in abalone. His doctoral research integrated multi-omics approaches, including genome assembly, comparative genomics, and transcriptomics.



Rakesh R. Chandra is in his third year of PhD in society and culture, and his research is on how moral values of individuals and communities shape climate change adaptation in coastal communities. This is a Discovery Early Career Researcher Award (DECRA) project under Dr. Jacqueline Lau. Rakesh is from Fiji.



Rayhan Dudayev is a PhD candidate at James Cook University studying how diverse knowledge systems are recognised in marine governance and how this shapes equity outcomes. He has a background in law and marine affairs and has worked on small-scale fisheries and environmental governance, from grassroots to global levels.



Megan N. Moran is in the final stages of her PhD within the College of Science and Engineering at James Cook University. Her research focused on optimising commercial traits through genome editing in farmed barramundi.