

Doing science differently

Lessons from the BioHeritage National Science Challenge

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New Zealand's National Science Challenges (NSCs) were created as experiments in 'mission-led' research to reduce competition and address national-scale challenges. The end of the NSCs in June 2024 presents a critical opportunity to evaluate what did (or didn't) work. This brief focuses on the Biological Heritage NSC.

Context

Biodiversity and biosecurity research supports the health of our society and environment. It's also needed for Aotearoa New Zealand to meet global agreements and protect our environment for future generations. Since 2014, BioHeritage has been a key source of knowledge and activity in these areas. What can be learned from BioHeritage about designing a national-scale research program for enduring societal and environmental benefit? Our research team analysed BioHeritage reports, interviews and publications to find out.

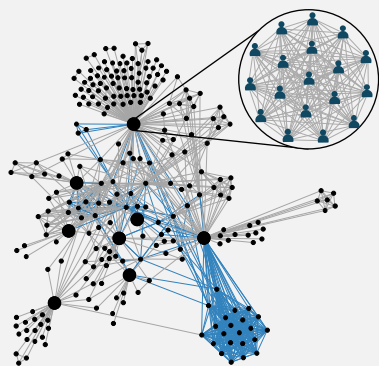
Key messages

- Te Tiriti-centred, values-based leadership, governance and processes have promoted collaborative and impactful research
- High-trust, flexible contracting allows research teams to be adaptive
- Stable, long-term funding is needed to retain people, networks and progress
- Building in evaluation of research programs can inform future approaches

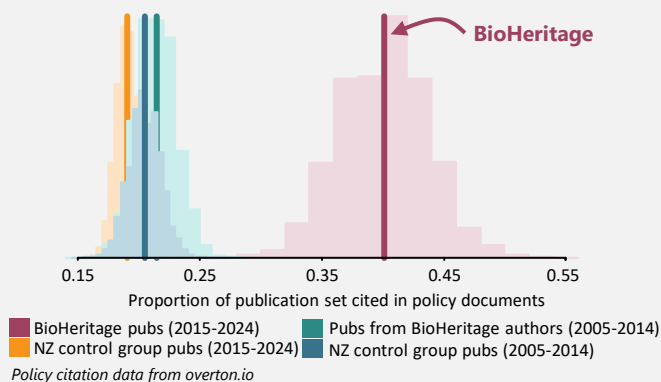
BioHeritage teams are collaborative and community-focused

- **Collaboration across diverse expertise, career stages and organisations:** Data on eight research teams collected from 2020-2023 show that individuals (178) come from 48 organisations and represent a wide range of disciplines. 30% of individuals identified as Māori and 40% as early-career. These eight teams reported connecting with 251 external parties, with 57% of these connections *not* captured in publications (**Fig A**).
- **Focus on 'non-traditional' research outputs:** In addition to 40 peer-reviewed publications (13% of total outputs from 2020-2023), the eight teams also produced over 260 diverse outputs developed with and/or for their research partners, including artworks, briefings, documentaries, websites, podcasts, and community resources. Because evaluation frameworks and KPIs are primarily publication-based, only 17% of total outputs were reported to MBIE, of which 50% were publications.
- **Policy impact:** BioHeritage publications (2015-2024) are cited more frequently in policy documents than comparable biodiversity research (**Fig B**).

A. Diverse research teams (●) connected with diverse organisations (•), with only 47% of connections captured through publications (blue lines).



B. 40% of BioHeritage publications are cited in a policy document, which is significantly higher than comparable biodiversity research in NZ and significantly higher than citations by BioHeritage authors prior to BioHeritage beginning.



Why was BioHeritage able to depart from business-as-usual?

- **Values:** There was a shared commitment among BioHeritage people to care for each other, prioritise community aspirations and foster collaborative, Te Tiriti-based approaches. These values were embedded and practiced across governance, decision-making and research teams.
- **People and leadership:** Research leads and researchers were appointed for their trusted history of demonstrating these values or a willingness to develop them. A co-leadership model sought to embed Māori perspectives and expertise at all levels.
- **Processes:** A high-trust contracting model provided research teams with the flexibility and autonomy to be responsive to partners, adapt to new challenges and pivot to take up new opportunities.

Systemic challenges

Our institutions and funding systems are not designed to sustain this approach. Interviewees identified that:

- Demands of community-based work, generating 'traditional' research outputs and administrative load can burn out researchers and research leaders if not supported.
- MBIE evaluative processes are not designed to value non-publication-based outputs or to account for lags between research and publishing
- Expectations (e.g., to deliver 'impact') often exceed resourcing.
- 10 years is 'just getting started'. People are concerned about the likely loss of relationships, knowledge and people from the research system.

Policy recommendations

Our findings suggest biodiversity, the research sector and society will benefit from:

- Te Tiriti-centred, values-based leadership, governance and research;
- Stable and longer-term (10+ years) funding that retains capability and builds on trusted partnerships, while supporting growth into new areas;
- Flexible and high-trust contracting models;
- Fit-for-purpose evaluative processes that value relationships, promote capacity-building and ensure we learn from past approaches.

This brief was developed by BioHeritage's **(re)Evaluating Impact** team. A special thanks to the interviewees who generously contributed their time and knowledge.

We are preparing this work for submission to a peer-reviewed journal – we welcome your ideas and feedback. **Contact:** helen.warburton@canterbury.ac.nz or aisling.rayne@cawthron.org.nz

