



Mapping Australia's Indonesia Research Capability

A report prepared by the Australian Council of Learned Academies in partnership with their member the Australian Academy of the Humanities, commissioned by KONEKSI. This program is an Australian Department of Foreign Affairs and Trade initiative.



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Acknowledgements

ACOLA and AAH would like to thank the Australian Academy of Science for assisting with data collection and analysis. We would also like to thank Dr Angie Bexley and Stewart Norup from KONEKSI, and DFAT Jakarta for their feedback on the draft report.

ISBN (digital): 978-0-6459638-1-6

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Citing this report

Contents contained herein should be attributed as follows: ACOLA and AAH (2024), *Mapping Australia's Indonesia Research Capability*. Commissioned by KONEKSI. This program is an Australian Department of Foreign Affairs and Trade initiative.

Acknowledgement of Country

ACOLA and AAH acknowledge all Aboriginal and Torres Strait Islander Traditional Custodians of Country and recognises their continuing connection to land, sea, culture and community. We acknowledge the Ngunnawal people on which ACOLA and AAH's main offices are based, in Canberra.

Publishing notes

All dollar amounts refer to Australian dollars.

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Executive Summary

In July 2023, Australia's Prime Minister and Indonesia's President began their Joint Communique with two priorities. One, the building of strategic trust, provided an overall goal for research collaboration; the other, the energy transition, put the leaders' seal on a shared challenge. Each country would 'contribute to the common effort to attain an open, stable, and prosperous region'.

Research, the most rigorous form of open, reasoned discovery and debate, is key to this agenda. The commitment by Australia's Prime Minister and Indonesia's President to establish research collaboration as a major pillar of the relationship between the two nations comes from a strong base. Landmark partnerships, primarily funded through DFAT development aid initiatives, have underpinned the growth of the bilateral research relationship to date. There are now four Australian Government policy agencies, at least five national research agencies, and three dozen Australian universities participating in Indonesia research.

Yet Australian experts with deep experience of the relationship say that Australia's research engagement with Indonesia is not as developed as Australia would like, and is not keeping up with the rising importance and complexity of our nearest neighbour.¹

It is clear that Australia's research relations with Indonesia are changing gear. Most recently, Australia has committed to building quality knowledge partnerships with Indonesia through the AUD \$65 million DFAT-funded bilateral research collaboration program *KONEKSI* (2023–27). As larger opportunities come into view, there is an appetite on both sides to accelerate collaboration.

But how do both countries make the most of this commitment and strong intention to collaborate to realise fruitful, mutually beneficial, enduring and sustainable bilateral research partnerships?

This report, funded through the *KONEKSI* program, seeks to help answer that question. Through a status update and exploration of opportunities for research collaboration, it outlines the current state of Australia Indonesia bilateral research partnerships, informs where existing strengths can be found, explores how to make more of opportunities and how to better understand barriers. It also points to key principles to underpin future activity.

This report primarily aims to map and inform understanding of Australia-Indonesia research collaborations including areas of Australia's strengths, current gaps and future needs, and identify preliminary insights on the work needed to engage productively with Indonesia on research.

This report maps 'Australia's Indonesia research', first through a bibliometric analysis of publication outputs, followed by consultations and interviews. The report also takes a deeper dive into three areas of collaborative strength and/or potential – society and culture, health and medicine, and energy.

The publication data outlines outputs by Australian researchers 'about' Indonesia (that is, with prominent mention of Indonesia in the content); and outputs 'with' Indonesia where there was co-authorship between an Australian and Indonesian researcher/s. The latter is used as a proxy for research collaboration.

Bibliometric data can, however, only take us so far. It cannot reveal the quality of the engagements, future potential for collaboration, or barriers that may be hampering more sustainable and effective research partnerships. To help fill these gaps, consultations and interviews were conducted with Australian experts with deep experience in the Australia-Indonesia research relationship.

This report tells only one side of the story. It studies Australia's Indonesia research through the eyes of researchers based in Australia, with reference to bibliometrics on Australian research publications. It begs a sequel report; an Indonesian perspective on Indonesia's capacity to collaborate with Australia.

The report's findings illustrate the complexity of building bilateral international research collaboration. A clearer view of these partnerships provided through this analysis can show what's at stake, guide decision making, improve alignment and maximise the benefits for both partners.

¹ Nicholas Moore AO (2023). Invested: Australia's Southeast Asia Economic Strategy to 2040. https://www.dfat.gov.au/ southeastasiaeconomicstrategy, accessed 12 June 2024. And: Michelle Ford (2012). Mechanisms for Building Research Capacity in Indonesia's Knowledge Sector through Australian Universities. AusAID Tertiary Education and Knowledge Sector Unit, https://www.dfat.gov.au/sites/ default/files/building-indonesian-research-capacity-aust-universities.pdf, accessed 12 June 2024. Ford found that "Indonesia is not considered a high-status destination for international, or even regional, research collaborations because of a widely held perception that it has yet to develop an internationally competitive record of academic research" (p.31).



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Key findings

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Bibliometric data shows that based on publication outputs, the research relationship between Australia and Indonesia has been strongest in the recent 5–10 years.

- Across 2014 to 2023, Australian-based researchers generated 6,000 publications about Indonesia across all fields of research – with this last decade representing 63% of all outputs, and 39% in the latter five years.
- Looking at co-authorship between Australian and Indonesian researchers, the data shows 8,500 publications were co-authored in the last ten years, of which 76% were published in that last decade, and an impressive 51% in last five years.

Australia is Indonesia's fourth research partner by co-authorship, behind Malaysia, Japan and the United States. Indonesia is Australia's 36th research partner by co-publication. That is, Australia has 35 national partners with whom the country publishes more with than Indonesia.

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By volume of publications about Indonesia, Australia ranks second in the world, behind only Indonesia itself. Much of this output stems from Australia's historic commitment to supporting Indonesia's development.

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Australia also performs strongly in terms of the proportion of Indonesia research that is collaborative, as measured by co-authorship – ranking fifth globally as one of Indonesia's top collaborating partners. Further, between 2014 and 2023, more than half (55.26%) of Australia's work 'about' Indonesia was produced working with an Indonesia-affiliated researcher. Australia's traditional research strengths in Indonesian language, society and culture have been foundational to the bilateral relationship, building capability on both sides in understanding local contexts and needs. However, we heard that as the study of Indonesian language and culture have declined in Australia in recent years, this has had flow-on effects to the efficacy of research collaboration.

Australia's investment to encourage health and medical research *with* and *about* Indonesia has been long-lasting, with legacy collaborations generating a significant proportion of the overall collaborative publication output. By contrast, collaborations on energy transition research are still nascent and emerging, with new interest in forging research links. Across both research areas, there are important opportunities to develop and strengthen these collaborations in future.

Efforts to address mutual challenges facing Australia and Indonesia through collaborative research would benefit from multidisciplinary perspectives and reducing asymmetries in the research relationship. A commitment to language, communication, and cultural competencies set the stage for cross-disciplinary collaborations to be pursued and enhanced.

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Consultations uncovered challenges in collaboration that are common to many international research partnerships, as well as some that are specific to Australia-Indonesia work. A broader approach to research collaboration, which integrates an understanding of the research systems and cultures at play in the two countries, would help realise further mutual benefits of fruitful research collaboration between the two nations.

Introduction

This report seeks to characterise the nature of Australia's knowledge-based relationships with Indonesia, and explore the capabilities, opportunities and challenges that arise from collaborative academic research.

The effort to understand Australia's Indonesia research capability emerges in the context of changing regional dynamics. It comes as nations such as Indonesia, Thailand and Vietnam are investing more in research, and are implementing numerous other policies to promote national development as knowledge economies.²

In July 2023, the leaders of Australia and Indonesia agreed that their nations would 'intensify cooperation in response to heightening geopolitical uncertainties and structural changes in the global economy.'³ Australia's Southeast Asia Economic Strategy to 2040 by Nicholas Moore AO also calls for 'a whole-of-nation effort', including from universities, to improve Australia's understanding of our neighbours.⁴ The Australian Government has an abiding interest in increasing Australia's understanding of Indonesian peoples, institutions and governance. Australia's Indonesia research and collaborative capabilities are foundational for these overlapping projects: Australia's "Indonesia capability", and Australia's Indonesia knowledge-based relationships.

The Indonesian government has laid out ambitious plans to transition from a developing country based largely on agriculture and resources to an advanced industrial, services and technology-based developed nation, by 2045. The vision is to be achieved through an economic transformation agenda focused on human development, science and technology, sustainable and equitable development, and national resilience and governance.⁵

There is no shortage of areas in which Indonesia and Australia are tackling common problems. For example, Australia and Indonesia are both managing the tension between urgent demand for secondary and tertiary health care (for example, through hospitals), and the more effective investment in primary care (such as, GP-level preventive and early disease detection).

- 4 Nicholas Moore AO (2023). Invested: Australia's Southeast Asia Economic Strategy to 2040. https://www.dfat.gov.au/southeastasiaeconomicstrategy, accessed 12 June 2024, pp. 7, 27.
- 5 Department of Foreign Affairs and Trade (August 2022). Investment Design, Australia Indonesia Knowledge Partnership Platform. https://www.dfat.gov.au/sites/default/files/koneksi-design-document.pdf accessed 26 July 2024.

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² Professor Jonathan Adams, David Pendlebury, Gordon Rogers & Dr Martin Szomszor (2019), Global Research Report – South and Southeast Asia, Institute for Scientific Information, Web of Science Group, p. 4.

³ Prime Minister of Australia the Hon Anthony Albanese MP and President of the Republic of Indonesia (4 July 2023). "Joint communique – Australia-Indonesia Annual Leaders' Meeting." Media statement. https://www.pm.gov.au/media/joint-communique-australia-indonesiaannual-leaders-meeting, accessed 12 June 2024.



The energy transition is another. And the agricultural sectors in both countries are facing challenges with extreme climate events, and embracing digital technologies. Australia and Indonesia face severe environmental challenges and have committed to net-zero carbon targets.

Over more than half a century, landmark partnerships between DFAT and researchers have underpinned and built the bilateral research relationship. The KONEKSI program, the latest iteration of the knowledge sector programs, is the funder of this report. Australia has committed to building quality knowledge partnerships with Indonesia through this \$65 million DFAT-funded bilateral research collaboration program (2022–27).⁶ It aims to strengthen Indonesia's sustainable development through the translation of research into innovation and policy.

In the context of KONEKSI, understanding Australia's knowledge of, and ability to work with, Indonesia through research – referred to as *Indonesia research capability* – has been raised as key to further strengthening the bilateral relationship.

Research collaboration is a complex undertaking. It involves bringing together diverse expertise, research cultures and capabilities, and managing the varied priorities between researchers, institutions, funding agencies, sectors and communities.

When collaborations are sought at an international level, there are often also historical, institutional, regulatory and cultural differences to navigate. Despite and *because of* these differences, collaboration done well can yield rich social and economic rewards – domestically, bilaterally and globally.

How do both countries make the most of this enduring commitment to accelerate research connections to realise fruitful, mutually beneficial, enduring and sustainable bilateral research partnership?

This report seeks to help answer that question by better understanding the current state of play, to inform where both nations might look to build on existing strengths and make more of opportunities, including by understanding barriers to collaboration and the principles that ought to underpin future development.

⁶ Department of Foreign Affairs and Trade (n.d.) "KONEKSI Flyer". https://www.dfat.gov.au/publications/development/koneksi-flyer accessed 13 June 2024.

1.1 Scope

This report was commissioned to improve the evidence and understanding of Australia's Indonesia research capability by:

- Mapping Australia's university and academic landscape in relation to Indonesia knowledge and collaboration strengths
- 2. Mapping Australia's broader research collaboration landscape including government and publicly funded research agency links
- 3. Identifying strengths, gaps and potential in knowledge partnerships with Indonesia, with reference to select focus areas

This mapping work represents an important first step in understanding the status of our research relationships and has been conducted as a 'rapid review'. For this preliminary examination, several elements of the capability map were out of scope, including education pipelines and industry research collaboration.

This report focuses on three key areas of strength and/ or potential for collaboration (see Chapter 3). The report authors acknowledge that given the timeframe of the report limited consultations have been conducted, and that other fields also present fruitful areas for future exploration.

It is also recognised that this report places deliberate focus on Australia's side of the knowledge partnership. It invites and warrants future work to explore complementary questions from Indonesian perspectives.

1.2 Approach

To conduct this 'rapid review' a combination of desktop research, bibliometric data and stakeholder consultation has been used. Research volume has been traced through bibliometric analysis of outputs, and grant funding of key publicly funded research agencies.

Research publication data has primarily been sourced from the Australian Research Council (ARC), the National Health and Medical Research Council (NHMRC), and Dimensions, a linked research database containing more than 106 million publications, as well as covering grants, patents, clinical trials, datasets, policy documents and technical reports.⁷ Dimensions harvests metadata from databases including CrossRef, PubMed, Europe PubMed Central, arXiv, Open Citation Data, and more than 130 publishers. Its publication data includes journal articles, preprints, books, book chapters and conference proceedings, though it is noted that the majority of the publications captured in Dimensions are in English.⁸

This range of data sources and methods was selected to ensure core aspects of collaborative capability were identified. To broaden and contextualise this data, two stakeholder roundtables and several individual consultations were conducted on selected research themes during April–May 2024.

1.3 Research team

This report has been jointly produced as a collaboration between the Australian Council of Learned Academies (ACOLA) and the Australian Academy of the Humanities. It was led by a multidisciplinary Expert Advisory Group (EAG), comprising Fellows and experts from across the five Learned Academies including: Professor Peta Ashworth OAM, Professor Edward Aspinall FAHA, Professor Ken Baldwin FTSE, Emeritus Professor Louise Edwards FAHA FASSA FHKAH (Chair), Professor Vedi Hadiz AM FASSA, Professor Joe Lo Bianco AM FAHA, Professor Budiman Minasny FAA, Professor Anushka Patel FAHMS and Emeritus Professor Kathryn Robinson FASSA.

The EAG provided advice on the project scope and direction, helping to identify gaps and realistic opportunities. It reviewed the projects data analysis and findings, providing critical context with regard to data inclusions and limitations. Following initial bibliometric review, the EAG approved the three focus areas for closer study – energy transition, public health and humanities and social sciences.

⁷ Dimensions (n.d.) "Why did we build Dimensions?" https://www.dimensions.ai/why-dimensions/ accessed 12 June 2024.

⁸ Dimensions (2020). "How is the publications data harvested?" https://dimensions.freshdesk.com/support/solutions/articles/23000018860how-is-the-publications-data-harvested- accessed 12 June 2024. And: Dimensions (2019). "What exactly is covered in the 'Publications' in Dimensions?" https://dimensions.freshdesk.com/support/solutions/articles/23000018859-what-exactly-is-covered-in-the-publications-indimensions- accessed 12 June 2024. And: Dimensions (2022). "Do you have documents in languages other than English?" https://dimensions. freshdesk.com/support/solutions/articles/23000018778-do-you-have-documents-in-languages-other-than-english- accessed 12 June 2024.



1.4 Report structure

Beyond this introduction (Chapter 1), the report unfolds as follows:

Chapter 2 maps the institutional arrangements and programs funded by the Australian Government related to Indonesia research capability, including portfolio agencies and research funding agencies.

Chapter 3 explores research publication data in terms of overall national outputs, activity based on academic field, and output by Australian university.

Chapter 4 dives more deeply into Australia's research capability across three specific research areas: society & culture, health & medicine, and the energy transition.

Chapter 5 synthesises a range of challenges captured across the data collection, and draws together principles to underpin enduring research collaborations with Indonesia into the future.

1.5 Uses of the report

This report is intended as a resource from those with an interest in the Australia-Indonesia research relationship. It does not aim to provide recommendations, but rather a set of insights and evidence on the current. state of the Australia-Indonesia research relationship. In the short term, it aims to equip the Department of Foreign Affairs and Trade (DFAT) and KONEKSI with a better understanding of the Australian knowledge capabilities on Indonesia needed to support informed and effective knowledge partnerships, including areas of Australia's strengths, current gaps and future needs, and identify preliminary insights on the work needed to engage productively with Indonesia on research.

More broadly, this report has strategic value to other Australian Government agencies, and stakeholders across the Australian research sector, to inform and underpin an understanding of Australia's current and prospective future engagement with Indonesia through research. 2

The Australia-Indonesia research partnership through government funding support

The following two chapters map the landscape of Australia's Indonesia research capability using both funding structures and evidence of research activity. This Chapter (2) focuses on Indonesia research-related institutional arrangements and programs funded by the Australian Government. These include the major structural mechanisms facilitating research-relevant activities and research-based collaborations with Indonesia. The bottom-up evidence of research activity as expressed in research publication data (Chapter 3), including university configurations is also examined.

Australian Government research funding mechanisms

The Australian Government makes direct investments in Indonesia research through its two research funding agencies, the ARC and the NHMRC, as well as through a range of programs administered through portfolio areas, the DFAT and the Department of Industry, Science and Resources (DISR).

As explored below, publicly available data on DFAT funding mainly captures research-related aid and development activities, whilst data from the ARC captures Indonesia-relevant research. Though different, they both point to significant investments (or investment potential) from different Australian Government agencies towards Australia's Indonesia capability.

2.1 DFAT-funded initiatives

Indonesia is notable in Australia's international research funding for the extent to which DFAT has shaped the research landscape. In contrast to Australia's established research collaborations with nations such as the USA and now China, DFAT's Indonesia funding has been targeted primarily through an overseas development assistance lens. These investments have taken many forms, with funding mobilised through partnerships with universities, and mission-based activities such as in health and research grant funding. Key commitments include:

- The Indonesia Project (TIP) at the Australian National University (ANU) has built economic and political research connections for 60 years.
- Research focused programs run out of DFAT's Jakarta Post have focused on Australian support for Indonesia's knowledge sector since 2012 (Knowledge Sector Initiative), and knowledge partnerships since 2023 (KONEKSI).
- The Indo-Pacific Centre for Health Security, an initiative based in DFAT Canberra, has funded mutual interests in health security since 2017.
- The Partnership for Australia-Indonesia Research (PAIR) partnership headquartered at Monash University joined Indonesian and Australian universities in tightly focused, placed-based research for social and economic impact.⁹

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⁹ Further detail on these programs is found in Section 2.1 and 4.1 of this report.

DFAT's earlier initiatives focused on capability building, and addressing challenges surrounding economic growth and poverty reduction. They also focused on growing the Indonesia studies in areas such as economics, history, political science, anthropology (i.e. TIP/PAIR), and encouraging mutual understanding between Australia and Indonesia (sometimes through research directly but also between cultural exchanges more broadly).

Notably, only four current programs are identified by DFAT specifically as "knowledge partnerships"¹⁰ with Indonesia: KONEKSI, the UN Global Pulse Asia Pacific Program, the Indonesia Project, and PAIR.

The KONEKSI program is the largest current concentration of research-relevant Australian funding directed at Australia-Indonesia collaboration. Its purpose is to increase the use of knowledge-based solutions for inclusive and sustainable policies and technologies, and focuses on promoting 'research with Indonesia,' rather than just 'about' Indonesia. As noted in the KONEKSI design document, the program aims to support bilateral research partnerships to "carry out and disseminate high-quality, multidisciplinary, and applied research on complex socioeconomic problems that reflect the mutual priorities and interests of both countries".¹¹ This marks a step change in funding goals beyond capability building and towards strengthening research collaboration through mutualinterest partnerships.

From our survey, recent DFAT-funded research in Indonesia includes the programs outlined in Table 1 and 2. These have been separated into two time periods, recent past programs (covering the 2010–22 period, Table 1) and ongoing or current (from 2022 onwards, Table 2).¹² It is noted that there are also additional funding streams supported by DFAT dedicated to the research capability pipeline: for example, between 2014 and 2020, the Australia Awards supported 2,070 long-term awardees to study at post-graduate level in Australian universities.¹³ While out of scope of this report, postgraduate education is a major component of the research and collaboration landscape that would merit further exploration.



¹⁰ Department of Foreign Affairs and Trade (n.d.) "Stability in Indonesia." https://www.dfat.gov.au/geo/indonesia/development-assistance/ stability-in-indonesia#koneski accessed 12 June 2024.

¹¹ Department of Foreign Affairs and Trade (August 2022). Investment Design, Australia Indonesia Knowledge Partnership Platform. https://www.dfat.gov.au/sites/default/files/koneksi-design-document.pdf accessed 26 July 2024. Pg 10.

¹² Sourced from the following site, unless referenced otherwise: Department of Foreign Affairs and Trade (n.d.) "Indonesia development cooperation – completed programs." https://www.dfat.gov.au/geo/indonesia/development-assistance/indonesia-development-cooperation-completed-programs accessed 12 June 2024.

¹³ Department of Foreign Affairs and Trade, (n.d.). "Australia Awards in Indonesia (AAI) End of Program Review Report and Management Response." https://www.dfat.gov.au/publications/development/australia-awards-indonesia-aai-end-program-review-report-and-management-response accessed 13 June 2024.

Table 1: Past DFAT Research-focused programs: 2010–22

DFAT program name	Funding / years	Description
Partnership for Knowledge-based Poverty Reduction	\$32.7 million 2010–21	Through a World Bank-managed trust fund, DFAT supported the Government of Indonesia to reduce poverty and inequality by helping it make evidence-based policy and program decisions.
The Indonesia Project (Phase III and IV)	~\$9.7 million 2012–21	The longest running Australian Government investment on Indonesia research specifically is The Indonesia Project, begun in 1965 between ANU and DFAT. Funding allocations in this period included \$4,749,617, (2012–17) for Phase III and \$4,999,866 (2016–21) for Phase IV. ¹⁴
Abdul Latif Jameel Poverty Action Lab South East Asia Phase II	\$18.4 million 2012–22	DFAT's commitments were oriented toward helping Indonesian policymakers address challenges to growth and poverty reduction by ensuring that social policies were informed by robust evidence.
Knowledge Sector Initiative	\$105 million 2012–22	The Knowledge Sector Initiative (KSI) contributed to more inclusive and equitable growth in Indonesia by supporting the production of high-quality public policy grounded in Indonesia-based research, analysis and evidence.
Pulse Lab Jakarta Phase II	\$12.7 million Supported by DFAT 2015–23	Pulse Lab Jakarta (PLJ) was a partnership project between United Nations Development Program (UNDP) and the Government of Indonesia, through its Ministry of National Development Planning (Bappenas). It was established in 2012 and has been supported by DFAT since 2015, providing support for methods and data tools to respond to complex policy challenges.
Australia Indonesia Institute	~ \$800,000 2016–22	Since 1989, DFAT has run a grant program to encourage mutual understanding between Australia and Indonesia. ¹⁵ There has been a trend in recent years towards more research- relevant programs, and since 2016–17 it has supported activities led by 23 Australian universities. ¹⁶ A preliminary analysis of funded programs reveals that DFAT funded between \$80,000 – \$169,000 worth of research-relevant projects per year between 2016–22.
Indo-Pacific Centre for Health Security	\$18.58 million 2017–22	In 2017, an Australian Government initiative established the Indo-Pacific Centre for Health Security based in DFAT Canberra. Through plurilateral programs including (but not limited to) research, it dedicated an overall country spend of \$18.58 million to Indonesia. ¹⁷ Across the Indo-Pacific it aimed to accelerate research on new drugs and diagnostics; strengthen human and animal health systems; and deepen people-to-people links.
Partnership for Australia Indonesia Research (PAIR)	\$8 million 2018–22	PAIR was a bespoke bilateral arrangement involving four (originally five) Australian universities, and 11 Indonesian universities, and administered by the Australia Indonesia Centre based at Monash University. Its objective is to 'contribute to sustainable development priorities through evidence-based decision making'. It administered \$8.5 million in its first phase of work (2018–22) for multidisciplinary applied research in South Sulawesi.

14 Australian National University (n.d.) "Indonesia Project Phase III" https://researchprofiles.anu.edu.au/en/projects/indonesia-project-phase-iii and "Indonesia Project Phase IV" https://researchprofiles.anu.edu.au/en/projects/indonesia-project-phase-iv accessed 12 June 2024.

15 Its current objective is 'to support continuity in people-to-people and institutional engagement between Australia and Indonesia across sectors for broad access and impact opportunities.' See Department of Foreign Affairs and Trade (n.d.) "Australia-Indonesia Institute." https://www.dfat.gov.au/people-to-people/foundations-councils-institutes/australia-indonesia-institute accessed 9 May 2024.

16 Department of Foreign Affairs and Trade (n.d.) "Previous Australia-Indonesia Institute grants." https://www.dfat.gov.au/people-to-people/ foundations-councils-institutes/australia-indonesia-institute/grants/previous-australia-indonesia-institute-grants accessed 12 June 2024. For data appraisal c2015 across the DFAT foundations and councils, and calculations as to 'research' funding as distinct from public diplomacy initiatives. https://acola.org/wp-content/uploads/2018/08/2-cultural-diplomacy.pdf accessed 12 June 2024.

17 Indo-Pacific Centre for Health Security (n.d.) "Indonesia." https://indopacifichealthsecurity.dfat.gov.au/countries/indonesia accessed 12 June 2024.

Table 2: Ongoing and current DFAT research-focused programs: 2022 onwards

DFAT program name	Funding / years	Description
The Indonesia Project	\$5.2 million	(Continued program, see Table 1).
	2022–26	For this program's most recent iteration (Phase V 2022–26), DFAT provided \$5.2 million to support Indonesian policy capability by developing strong research and analytical skills in cohorts of Indonesian economic and social policy experts.
Indo-Pacific Centre for	Unknown	(Continued program, see Table 1).
Health Security	portion of \$620 million 2022/3 - 2026/7	The new iteration of this program is Partnerships for a Healthy Region (2022/3 – 2026/7), worth \$620 million over five years aiming to support Pacific and Southeast Asian countries to deliver better health outcomes. ¹⁸
Australia Indonesia	~\$350,000	(Continued program, see Table 1).
Institute (All)	2023–24	For the grant round of 2023–24, approximately \$350,000 of the total dispersed \$904,902 was awarded to research-relevant projects. In the history of the Institute, this round was by far the biggest funding dedication to research-related activities, compared to an average of \$150,000 per year in previous years. ¹⁹
KONEKSI (Australia- Indonesia Knowledge Partnership Platform)	\$65 million 2023–27	Funded through DFAT Overseas Development Assistance at \$65 million over five years, the bilateral KONEKSI program is the largest current concentration of research-relevant Australian funding directed at collaboration. Its purpose is to increase the use of knowledge-based solutions for inclusive and sustainable policies and technologies. It is funded at a similar rate to its decade-long predecessor, KSI.
UN Global Pulse – Asia	\$1 million	(An expansion of the Pulse Lab Jakarta (PLJ), see Table 1).
Pacific	2023–24	Launched in early 2023, the UN Global Pulse-Asia Pacific (UNGP-AP) is a UN regional hub which serves a data innovation facility that will support policymakers in the region to use big data and artificial intelligence (AI) to design innovative evidence-led policy and programs. It provides the opportunity for Indonesia to share some of the advances made under PLJ with the region.

2.2 Australia's research funding agencies

A very different source of government funding for Australian researchers are a suite of competitive research grants programs which put a premium on researcher initiative and academic excellence. Unlike DFAT grants, these funding programs are not country-specific, although they *may* disperse funding for Indonesia capability if those applications are competitive in the field, and most encourage international collaboration.²⁰

Australian Government competitive grants strongly influence the research conducted in local universities because they reward excellence, and they mobilise large sums of money. To this extent, these funding structures are part of the Australian research landscape and our Indonesia capability picture. The following sections have sought to examine how Indonesia research features across several categories of research grant funding, administered by Australia's two research councils, the ARC and the NHMRC. In general, deeper analysis would be required to determine whether and what the connection is between grant funding seeded by DFAT and Indonesia-related collaborations through the ARC or NHMRC (for example, whether DFAT funding has led to further or more mature collaborations). As a starting point however, the survey of Australia's research funding agencies aims to provide preliminary evidence of the recent funding commitments across these two councils.

¹⁸ Department of Foreign Affairs and Trade (n.d.) "Partnerships for a Healthy Region (PHR) initiative – Design Document." https://www.dfat.gov. au/publications/development/partnerships-healthy-region-phr-initiative-design-document accessed 12 June 2024.

¹⁹ Department of Foreign Affairs and Trade (n.d.) "Previous Australia-Indonesia Institute grants." https://www.dfat.gov.au/people-to-people/ foundations-councils-institutes/australia-indonesia-institute/grants/previous-australia-indonesia-institute-grants accessed 12 June 2024.

²⁰ Australian Research Council (n.d.) "International." https://www.arc.gov.au/about-arc/strategies/international accessed 6 June 2024.

The Australian Research Council

The ARC is a Commonwealth entity and independent government agency which currently reports to the Australian Minister for Education. The ARC is the largest source of competitive research funding awarding grants in all research fields, except specific areas of clinical health and medical research, which is the remit of the NHMRC.²¹ Examination of publicly available ARC funding data allows two notable lenses for analysis: grants which mention Indonesia, and grants which nominate an intention to collaborate with Indonesia.

'About' Indonesia

In undertaking the data analysis, grants which mention the Indonesia keyword 'Indonesia*' in the summary of the grant proposal were considered to be counted as research 'about' Indonesia. Using this metric, the ARC has awarded \$79 million in funding for research since 2002.

Collaboration with Indonesia

It is also possible to calculate grants administered with an "intention to collaborate" with an Indonesian research institution. This intent is recorded at grant application stage, and in most cases it was unclear from the data whether, or to what extent, this intention has been realised. These collaborative intentions are more concrete for Centres of Excellence, the ARC's premier large-scale funding program for strategic research, where applicants are required to list specific partner organisations, and partnerships can be referenced on their respective websites.

Table 3 reflects the ARC funding mechanisms in which intentions to collaborate appeared. These figures point to the scale of the ARC research investment that has had the potential to build Australia's Indonesia research relationships.

The ARC's Discovery Program is designed to support projects conceived and led by researcher initiative. ²⁵ This program has supported the largest volume of projects mentioning Indonesia. From 2014–23, there were 72 distinct projects funded through the Discovery Program (out of a total of 6,209 projects), accounting for 45% of the total set of Indonesia-relevant projects. The total funding for Discovery Projects was \$28,507,666 (not adjusted for inflation). This represents 0.01% of the total \$2,500,596,480 Discovery Project funding pool over that period.²⁶

Table 3: ARC funding allocated using 'intention to collaborate' with Indonesia

ARC funding mechanism	Detail
ARC Grants	When combining all successful grant applications 'about' Indonesia with the intent to collaborate, the ARC invested \$420 million since 2002, including \$136 million over the decade from 2014 to 2023. ²²
ARC Centres of Excellence	From 2005 to 2023, the ARC funded seven Centres of Excellence that had nominated an intention to collaborate with Indonesia, though none had a stand-alone focus on Indonesia. ²³
ARC Industrial Transformation Training Centres	From 2012 to 2023, the ARC funded four partnerships between industry and research with intent to collaborate with Indonesia. ²⁴
ARC Australian Laureate Fellowships	From 2012 to 2023 the ARC funded eight Australian Laureate Fellowships, nominating an intent to collaborate with Indonesian partners, and worth on average \$3 million.

²¹ There are some minimal exceptions, detailed here: Australian Research Council, (n.d.). "ARC Medical Research Policy Eligibility Examples" https://www.arc.gov.au/about-arc/program-policies/medical-research-policy/arc-medical-research-policy/arc-medical-research-policyeligibility-examples, accessed 9 July 2024.

²² Project team analysis of publicly available ARC data via Grants Dataset | Australian Research Council, search 'Indonesia*' to obtain all results, about and with; search grant summaries for 'Indonesia*', conducted on data as of 17 April 2024.

²³ The seven Centres were worth between \$23 million and \$36 million over 5–7 years. Their research focuses were: 2005, Ore deposits: tailoring research to the Australian context; 2005, Coral reef biodiversity: supporting Australia's coral reefs; 2014, Integrated coral reef studies; Population ageing, 2017; Dynamics of language, 2014; Biodiversity and heritage, 2017; and Elimination of violence against women, 2023, to improve policy and practice across Australia and the Indo-Pacific.

²⁴ These were: Food value chain (2012), Mining value chain (2013), Antimicrobial resistance (2019) and Global hydrogen economy (2020).

²⁵ All data sourced through the ARC NCGP database search, using keyword 'Indonesia*'. See: Australian Research Council, (n.d.) "Grants Search." https://dataportal.arc.gov.au/NCGP/Web/Grant/Grants accessed June 2024.

²⁶ Australian Research Council, (n.d.). "NCGP Trends: Funding Overview". https://www.arc.gov.au/funding-research/funding-outcome/grantsdataset/trend-visualisation/ncgp-trends-funding-overview accessed 09 July 2024. The recent study by the Australian Academy of the Humanities made a similar comparison in relation to China Research; however, it is noted that country comparisons should be made with caution as they can obscure the significant differences in relationship and research ecosystem maturity. Source: Australian Academy of the Humanities (2023). "Australia's China Knowledge Capability." Canberra.

Three quarters of these projects were in humanities, arts and social sciences (HASS) fields, receiving more than 76% of allocated Discovery Project funding for Indonesia research (a non-adjusted total of \$21,874,253 for the 56 projects). A small proportion of Discovery Projects about Indonesia were in the natural, physical, technological, or engineering sciences – only 16 projects, totalling \$6,633,413 (not adjusted).

Through the ARC's Linkages Program, designed to connect researchers with industry, government and the Australian community, there has been limited Indonesia-relevant funding awarded. A total of 15 Indonesia-focused projects were funded between 2014–23, totalling \$6,687,687 in Linkage Projects (not adjusted), covering less than 0.01% of the \$726,718,991 funds dispersed.²⁷ This time, there was a more even split of 8 projects in HASS/SHAPE (Social Sciences and the Arts for People and the Economy) disciplines and 7 in physical, environmental, health and data sciences.

The ARC also funds three Fellowship schemes supporting workforce development which aim to support early, mid-career and senior researchers: Discovery Early Career Researcher Award (DECRA) (2012-present), generally 200 awarded annually; Future Fellowships (2009-present), 100 awarded annually; and Australian Laureate Fellowships, approximately 15 awarded annually. Across the same time period (2014–23), the data shows that Indonesia-focused research across these schemes was variable:

- The DECRA scheme awarded 33 Fellowships with a focus on Indonesia, and again the majority (78%) HASS/SHAPE fields, with total funding (not adjusted) of \$13,145,866.
- The Future Fellowships scheme allocated 19 awards for Indonesia-related research, with total funding (not adjusted) of \$16,310,439. A majority (71%) of this project funding is across HASS/SHAPE disciplines, and the rest covering environmental sciences, natural sciences and genetics.
- 8 Laureate Fellowships with mention of Indonesia during the period 2014–23 were identified.

For context, there were 992 Future Fellowships and 1,998 DECRA projects awarded over that period in total.²⁸

The National Health and Medical Research Council

The NHMRC is a government agency under the Health and Aged Care portfolio, which works to deliver quality health outcomes for all Australians. Its remit includes awarding grants for health and medical research. Although the NHMRC primarily funds Australian-focused health challenges, it does fund Australian contributions to global research agendas that *include* Indonesia.

Data analysis of NHMRC grant funding showed a very small number of grants with the keyword "Indonesia*" (less than 15 across 2014–23). A small number of international collaboration grants with funding contributions from the NHMRC (among other international partners) were also traced, including 4 through the eAsia Joint Research Program and one through the Global Alliance for Chronic Diseases.²⁹ Lastly, 2 Emerging Leadership grants and 2 Ideas Grants funded by NHMRC were recorded across the same period. These low volumes are not unusual given the nature and remit of the NHMRC.³⁰

It is noted that although these project numbers are low, NHMRC is listed as a top primary funding organisation for publications in health and medical research about and with Indonesia in the Dimensions database (see Section 4.2). Further work to unpack the funding to publication pipeline of Australia's Indonesia capability in health would be warranted, given the intersections with other international players in the global medical research and funding space.

Lastly, it is worth noting that the NHMRC's International Engagement Strategy for 2023 to 2026 has four priorities which include: Collaboration in the Indo-Pacific region; Shared global health priorities; Researcher capability and research impact and International networks and resources.

²⁷ Australian Research Council, (n.d.). "NCGP Trends: Funding Overview". https://www.arc.gov.au/funding-research/funding-outcome/grantsdataset/trend-visualisation/ncgp-trends-funding-overview accessed 09 July 2024.

²⁸ The ARC has not supported a large number of activities outside of these programs. Across 2014–23, we found a handful of Centres of Excellence with mention of Indonesia as a partner, an Industrial Transformation Training Centre, Industrial Transformation Research Hub, two Linkage Infrastructure Equipment and Facilities activities, one Learned Academies Special Project and one Special Research Initiative. These have varying levels of distinguishable engagement.

²⁹ See https://www.grants.gov.au/Fo/Show and https://www.gacd.org/research/projects/su21.

³⁰ Australian Academy of the Humanities (2023). "Mapping Australia's China Knowledge Capability". https://humanities.org.au/wp-content/ uploads/2023/03/Australias-China-Knowledge-Capability-report-1.pdf accessed 14 June 2024. Pg 122.

2.3 Department of Industry, Science & Resources

The Australian Department of Industry, Science & Resources (DISR) is broadly responsible for fostering research relationships with international partners, through agreements, initiatives and funding programs. Several current activities reflect a commitment to the research relationship with Indonesia, including:

Memorandum of Understanding on Electric Vehicles

In November 2023, DISR announced a new MoU with Indonesia to establish collaboration on electric vehicles, including mapping supply chains, fostering joint scientific and research studies, and fostering new business-tobusiness links.³¹

Future Batteries Cooperative Research Centre

Cooperative Research Centres, funded by DISR, seek to strengthen and promote the potential of collaborative, industry-led research. Although the centres mainly have a domestic focus, they do work at a cross-section of industry and research collaboration which can extend to international players. In 2023, the Future Battery Industries Cooperative Research Centre agreed a Memorandum of Understanding with Indonesia's National Battery Research Institute to strengthen collaboration in battery research, technology and innovation between Australia and Indonesia. DISR has invested \$25 million in this Centre, to operate from 2019 to 2025.

Global Science and Technology Diplomacy Fund

In March 2024, the Government announced that the Global Science and Technology Diplomacy Fund's 2024 round would include 'a share of \$6 million to partner with counterparts in Indonesia, Malaysia, Singapore, Thailand, Vietnam, New Zealand, Japan, the Republic of Korea and Brazil'.³² Its previous iteration had focused on China and India only. Applications must address at least one of five priority themes:

- Advanced manufacturing
- Artificial intelligence
- Quantum computing
- Hydrogen production
- RNA (mRNA) vaccines and therapies.³³

2.4 Publicly Funded Research Agencies

The Australian Government also funds Indonesia research collaboration through its own agencies dedicated to research. Notable agencies with active Indonesia engagement include the Australian Centre for International Agricultural Research (ACIAR), the Commonwealth Scientific and Industrial Research Organisation (CSIRO), and Geoscience Australia. Publicly available data from these agencies does not always indicate the percentage of funding dedicated to these research collaborations with Indonesia.

³¹ Minister for Industry and Science, the Hon Ed Husic MP (24 November 2023). "Indonesia and Australia cooperation on electric vehicles." https://www.minister.industry.gov.au/ministers/husic/media-releases/indonesia-and-australia-cooperation-electric-vehicles accessed 12 June 2024.

³² Minister for Industry and Science, the Hon Ed Husic MP (20 March 2024). "First grants Global Science and Technology Diplomacy Fund." https://www.minister.industry.gov.au/ministers/husic/media-releases/first-grants-global-science-and-technology-diplomacy-fund accessed 30 May 2024.

³³ Guidelines available at: Global Science & Technology Fund (n.d.) "Strategic Element." https://glodip.org.au accessed 30 May 2024.

ACIAR

ACIAR brokers international research partnerships to help address agricultural challenges in the Indo-Pacific region. In 2023–24, the Australian Government invested \$5 million (budgeted funding) across 19 bilateral and regional projects involving Indonesia through ACIAR.³⁴

CSIRO

CSIRO is largely domestically focused but does undertake research about Indonesia, including working with Indonesian partners for over 40 years. Its main focus areas are:

- natural resources
- ending plastic waste
- mapping blue carbon
- improving fire management and restoring peatland
- developing research capacity for managing Indonesia's fisheries resources
- developing research capacity for data handling
- technical assistance for health security
- brokering partnerships for the energy transition.³⁵

Geoscience Australia

Geoscience Australia partners with DFAT, Indonesia, and international organisations to improve technical capabilities for managing natural disasters and resources. Included in its activities is cooperation between Australia, Indonesia and India on region-wide warning services of the Indian Ocean Tsunami Warning & Mitigation System; Earth Observation for Climate Smart Innovation (with CSIRO); and through the Australia-Indonesia Energy Dialogue support capacity development for carbon capture, utilisation and storage. Geoscience Australia also provides demand-driven support for Southeast Asian nations' management of their maritime jurisdiction, e.g. establishing authoritative geography, understanding climate change resilience, protecting marine features through environmental management, and encouraging open geospatial data sharing.

Other

Collaborations also take place through other government agencies, including Australian Institute of Marine Science (AIMS) and the Australian Nuclear Science and Technology Organisation (ANSTO). This information was not readily available from data sources available to this project. Further work is needed to analyse the strength, scale and enduring nature of government research agency relationships, and how they might be further leveraged to support collaborative engagement.

³⁴ Australian Centre for International Agricultural Research (2024). "Indonesia." https://www.aciar.gov.au/publication/aop2022/indonesia accessed 30 May 2024.

³⁵ Correspondence from CSIRO (Amelia Fyfield) – Brass, Relf and Lane, 22 February 2024. And: CSIRO (n.d.) "Indonesia" https://www.csiro.au/en/work-with-us/International/Asia/Southeast-Asia/Indonesia accessed 13 June 2024.

The Australia-Indonesia research partnership through publication data

The previous chapter provided a landscape view of Australian Government funding programs that enable Australian researchers to undertake research 'about' and/or 'with' Indonesia. This Chapter explores one of the outputs of that funding through an analysis of academic publication data.

Though only one of the possible outcomes of research, academic publication output is a widely used metric for analysing the strength of research collaboration. This Chapter explores evidence of the Australia-Indonesia relationship using research publication data from the linked research database *Dimensions* (see Section 1.2 for further detail).

Publication output by field of research – Australia and Indonesia

Data analysis was conducted to provide a broad snapshot of overall publication outputs for Australia and Indonesia, across all fields. This yielded information on Australia and Indonesia's top-generating research disciplines based on publication volume.

Figure 1 illustrates total national research publication output by fields of research as a percentage of total country publications. Noting that Australia's publication output is overall larger than Indonesia's (1,151,693 versus 748,302 for 2014–23), percentages have been calculated as relative to each respective country (i.e. Biomedical and Clinical Sciences represents 29.23% of Australia's total research output, while that same field represents 8.21% of Indonesia's total research output). This reveals activity differences across the two research sectors, noting that some publications may have two or more FoR codes³⁶ assigned (Figure 1).

Examining the top five fields of publication activity reveals areas of commonality; for example, both countries feature Engineering, Biomedical and Clinical Sciences, and Information and Computing Sciences, in their top five (simplified in Table 4).

In addition to Biomedical and Clinical Sciences, and Engineering, Australia also has higher publication activity in Health Sciences and Biological Sciences. Conversely, Indonesia has higher publication activity in areas such as Commerce, Management, Tourism and Services, Agriculture, Veterinary, and Food Science, and Education, as a percentage of its total outputs.

These areas of strong activity may point to opportunities for Australian researchers to collaborate further with Indonesia. As the data shows in Section 3.1, some of these areas of strong Indonesian activity are already being matched with collaboration between Australian and Indonesian researchers.

³⁶ FoR Code refers to the 'Field of Research' Australian and New Zealand Standard Research Classification (ANZSRC) released in 2020, as per: Australian Research Council, (n.d.) "Classification Codes – FoR, RFCD, SEO and ANZSIC Codes." https://www.arc.gov.au/manage-your-grant/ classification-codes-rfcd-seo-and-anzsic-codes accessed 10 July 2024. The latest classifications of 2- and 4-digit codes can be downloaded from the data cubes available on this page: https://www.abs.gov.au/statistics/classifications/australian-and-new-zealand-standard-researchclassification-anzsrc/latest-release.



Figure 1: Australia and Indonesia's publication outputs as a percentage of total publication outputs, 2014–23 (based on Australia's top 2-digit FoR Codes).

Source: Dimensions, exported 08 July 2024. As noted in Section 1.2, recall that while Dimensions does include some non-English language publications, a majority of publications captured in the database are in English, and therefore it may miss some of Indonesia's publication output in language.

Table 4: Top five publication outputs based on percentage of total national publication outputs 2014–23

Australia	Indonesia
1. Biomedical and Clinical Sciences	1. Commerce, Management, Tourism & Services
2. Engineering	2. Education
3. Health Sciences	3. Engineering
4. Biological Sciences	4. Information and Computing Sciences
5. Information and Computing Sciences	5. Biomedical and Clinical Sciences

The strengths and limitations of publication data

How useful is publication data for measuring and tracking research? Academic publications are the traditional way of sharing knowledge with the academic community, and creating a record of research conducted. Research publications are most commonly in the form of academic journal articles, and other scholarly forms such as books. Sharing knowledge in this way helps ensure that the resource-intensive work of research does not have to be repeated and provides a base for other researchers to build on in creating new knowledge. To this extent, academic publication data does reflect a significant quantum of research activity across disciplines and topics.

However, publication data is also limited.

- Volumetric publication data does not account for the different publishing cultures between academic disciplines. Journal publications are the standard academic output in most science, technology, engineering and math (STEM) fields, often involving multiple authors and with multiple outputs across a research project. In contrast, booklength monographs remain the standard in many humanities, arts and social sciences (HASS) fields; these are relatively much longer, generally involve fewer authors, and are produced over extended time periods. For this reason, Australia's research evaluation ERA weighted books at a ratio of 5:1 compared to other research outputs in recognition of the quality and depth of this research type (See ARC 2018–19). Volume count alone therefore cannot be used to compare the productivity or strength of different research fields.
- While publications are often used as a currency for academics' careers within universities, there is growing concern that the incentives that drive academics to 'publish or perish' have become counterproductive, in both Australia and Indonesia, driving quantity over quality.*
- Research also generates other important outputs such as policy documents or community activities, and these are often not reflected well, or sometimes at all, in publication data.

For these reasons, publication data is treated with care. It is a useful starting point to make general observations about research collaboration and capability.

3.1 Publication outputs 'with' and 'about' Indonesia

As well as national publication outputs, publication data can also be used to trace research collaboration activity between countries. Two main indicators have been used in the data to understand different types of research collaboration between Australia and Indonesia:

- Co-authorship 'with' Indonesia: The first data lens focused on volume of co-authorship between Australia and Indonesia, seeking publications where the author list included at least one researcher from Australia and one from Indonesia (using country-affiliation). This denotes documents where researchers from different country affiliations were brought together *in some way* for a publishing output. This has been used as a proxy for research collaboration 'with' Indonesia.
- Publications 'about' Indonesia: The second lens focused on volume of publications with the keyword 'Indonesia*' in the title or abstract.³⁷ This denotes documents where any variations on the word *Indonesia* feature prominently in the content. This has been used as a proxy for research 'about' Indonesia (see page 23).

For the purposes of this report, the data concentrates on the recent decade (2014–23).³⁸ Of the overall number of publications involving Australian and Indonesian co-authorship, 76% of the content has been published in the last ten years, and 51% in last five years (5,711 publications from 2019–23). Similarly, approximately 63% of the total Australian publications 'about' Indonesia was published in the last ten years.

These high numbers are likely due in part to overall increases in publication output, particularly with publication through online academic journals. They may also reflect the growing investment in the research relationship outlined in Chapter 2.

^{*}For more information on publication incentives, see: ACOLA (2023), *Research Assessment in Australia: Evidence for Modernisation*. A report to the Office of the Chief Scientist, Australian Government, Canberra.

³⁷ Use of the asterisk at the end of the word allows inclusion of word ending variations in the database search (i.e. 'Indonesia' but also 'Indonesian', and plural forms).

³⁸ Publications involving Australian and Indonesian co-authorship (by institutional affiliation) totals 11,192 (all time, as at 16 Feb 2023), and 8,537 in the ten-year focus period (2014–23).

Co-authorship 'with' Indonesia

Focusing on co-authorship, Australia's research capability with Indonesia appears strong. Australia ranks among Indonesia's top collaborating partners by volume (Table 5).

By contrast, Indonesia ranks 36th among Australia's collaborating partners in terms of publication output, or fourth when compared to other developing countries (after India, Malaysia and Bangladesh) (Table 6).

Australia's rate of collaboration with Indonesia has also gradually increased over the last decade (Figure 2).

Table 5: Indonesia's top co-publication partners 2014–23

	Name	Publications
(1)	(Indonesia)	(742,083)
2	Malaysia	16,360
3	Japan	13,249
4	United States	8,691
5	Australia	8,516

About the data: Analytical views – Country/Territory – Exported on May 13, 2024. Criteria: Publication Year is 2023 or 2022 or 2021 or 2020 or 2019 or 2018 or 2017 or 2016 or 2015 or 2014; Country/Territory is Indonesia.

Table 6: Australia's top co-publication partners 2014–23

	Country	# Publications
(1)	(Australia)	(1,147,070)
2	United States	178,980
3	China	147,954
4	United Kingdom	134,807
5	Germany	65,241
36	Indonesia	8,516

About the data: Analytical views – Country/Territory – Exported on May 13, 2024. Criteria: Publication Year is 2023 or 2022 or 2021 or 2020 or 2019 or 2018 or 2017 or 2016 or 2015 or 2014; Country/Territory is Australia.



Figure 2: Indonesia's top co-publication partners: Japan, Malaysia, United States, Australia 2014–23

Source: https://app.dimensions.ai. Exported: 26 February 2024. Criteria: Publication Year is 2023 or 2022 or 2021 or 2020 or 2019 or 2018 or 2017 or 2016 or 2015 or 2014; Country/Territory is Indonesia. ©2024 Digital Science and Research Solutions Inc. All rights reserved. Non-commercial redistribution/external re-use of this work is permitted subject to appropriate acknowledgement. This work is sourced from Dimensions[®] at www.dimensions.ai.

This increase is in step with others, aside from a notable jump in Indonesia's collaboration with Malaysia. From preliminary analysis, this increase in collaboration with Malaysia appears to have occurred as Malaysia has sought to invest more heavily in its high education sector, and encourage Indonesian students to study at its universities.³⁹

It is also pertinent to examine Australia's top co-authorship outputs based on academic field.⁴⁰ The data points to comprehensive spread of research areas involving Australian and Indonesian researchers (Figure 3).

This shows that Australia has produced a very high volume of research outputs with Indonesian co-authors in STEM disciplines in the last decade, with Biomedical and Clinical Sciences featuring most prominently, followed by Health Sciences.

Although the STEM disciplines are expected to feature strongly in volume measures due to the nature of academic publishing in these fields, research output from 'Human Society' also features strongly in terms of co-authorship with Indonesian researchers, as does output from Commerce, Management and Tourism. Recalling Figure 1, Commerce, Management and Tourism was one of Indonesia's highest performing academic disciplines by volume, so this activity appears to be joined with Australian researcher interests to a degree.

On the other hand, some areas of Indonesian strength are not matched by co-authorship output. Indonesia has relatively high levels of activity in Philosophy and religious studies, and Law and Legal studies (see Figure 1), both of which feature relatively low in co-authorship with Australian researchers (Figure 3).

To examine Australia's Indonesia capability beyond publication volume, some academic disciplinary strengths are explored in more depth in Chapter 4, *Collaboration strengths by three areas of research*.



Figure 3: Top fields of Australia-Indonesia co-publication by FoR ANZSRC 2020 code, 2014–23

Source: https://app.dimensions.ai. Exported: 14 February 2024. Criteria: Publication Year is 2023 or 2022 or 2021 or 2020 or 2019 or 2018 or 2017 or 2016 or 2015 or 2014; Country/Territory is Australia. ©2024 Digital Science and Research Solutions Inc. All rights reserved. Non-commercial redistribution/ external re-use of this work is permitted subject to appropriate acknowledgement. This work is sourced from Dimensions[®] at www.dimensions.ai.

³⁹ See, British Council (2023). "Malaysia and Indonesia strengthen HE collaboration." https://opportunities-insight.britishcouncil.org/news/news/ malaysia-and-indonesia-strengthen-he-collaboration accessed 10 July 2024.

⁴⁰ Using Field of Research (FoR) ANZSRC 2020 codes

Australian publication output 'about' Indonesia

The second data lens focuses on publications with the keyword 'Indonesia*' in the publication title or abstract (covering any publications with prominent mentions of the word Indonesia, and variations on that word). Based on this proxy for Indonesia-focused research, Australia comes second globally in terms of publication output — only Indonesia itself produces more (Table 7).

Looking again across different academic fields, there is a slightly different spread of publication output based on 'about' Indonesia (Figure 4). Unlike co-authorship, this data points to research with content-based interest in Indonesia.

Biomedical and Clinical Sciences still feature prominently by volume, but this time the highest output by academic field for Australian publications 'about' Indonesia are found in Human Society. This suggests a strong representation of research content *focused on Indonesia* in Human Society publications over the last decade, by Australian authors.

Again, the nature of these research capabilities is explored in more depth in Chapter 4.

Table 7: Top global publishers of Indonesia research (2014–23)

	Country	'About Indonesia' publications (2014–23)	All publications (based on location of research institution)	% publications about Indonesia
1	Indonesia	166,053	742,083	22.38%
2	Australia	6,004	1,147,070	0.52%
3	United States	5,878	7,917,687	0.07%
4	Japan	5,470	2,277,025	0.24%
5	Malaysia	4,682	308,954	1.52%

About the data: Analytical views – Country/Territory – Exported on May 13, 2024. Criteria: "Indonesia*" in title and abstract; Publication Year is 2023 or 2022 or 2021 or 2020 or 2019 or 2018 or 2017 or 2016 or 2015 or 2014.



Figure 4: Australia's publications 'about' Indonesia in select academic fields, 2014–23

Source: https://app.dimensions.ai. Exported: 14 February 2024. Criteria: Publication Year is 2023 or 2022 or 2021 or 2020 or 2019 or 2018 or 2017 or 2016 or 2015 or 2014; Country/Territory is Australia. ©2024 Digital Science and Research Solutions Inc. All rights reserved. Non-commercial redistribution/ external re-use of this work is permitted subject to appropriate acknowledgement. This work is sourced from Dimensions* at www.dimensions.ai.

Cooperative research 'about' Indonesia

To examine how Australia performs in terms of the cooperative nature of the country's research outputs, the number of Australia's publications 'about' Indonesia were examined in relation to the number of publications that involved working 'with' an Indonesian co-author. This could point to research publications that were more inclusive of both perspectives, as one indicator of trusted relationships and cooperative work.

On this simple metric, Australia performs well: between 2014 and 2023, more than half (55.26%) of Australia's research output 'about' Indonesia was produced in co-authorship. Comparatively, while the USA was a top performer in terms of publication volume, it performed less well in terms of author collaboration (Table 8).

It is important to note that cooperative work 'about' Indonesia is not the only goal in building research capability: there is also value in co-authored work on topics beyond the focus on "Indonesia", and equally, research about Indonesia from an exclusively domestic Australian perspective. Nevertheless, the EAG saw value in this shared collaboration work continuing as a critical part of Australia's strength.

For further discussion of principles to underpin effective research collaboration, see Chapter 5.

Original rank based on volume of 'about' Indonesia (most to least)	Country	Overlap: 'About' Indonesia (keyword in title/abstract) AND 'with' Indonesia org affiliation, over 2014–23	'About' only: Publications (2014–23) in with "Indonesia*" in title & abstract	Percentage
1	Indonesia	166,053	166,053	100.00%
13	Taiwan	875	1,358	64.43%
5	Malaysia	2,994	4,682	63.95%
7	Netherlands	1,703	2,742	62.11%
11	Thailand	985	1,599	61.60%
18	New Zealand	419	684	61.26%
17	Philippines	412	694	59.37%
4	Japan	3,220	5,470	58.87%
19	Vietnam	356	642	55.45%
2	Australia	3,318	6,004	55.26%
8	Germany	1,255	2,273	55.21%
6	United Kingdom	2,045	3,797	53.86%
14	France	613	1,141	53.72%
15	South Korea	451	903	49.94%
21	Switzerland	283	575	49.22%
3	United States	2,546	5,878	43.31%
12	Singapore	565	1,358	41.61%
16	Canada	321	870	36.90%
9	China	749	2,224	33.68%
10	India	655	2,034	32.20%

Table 8: Australia's Indonesia research capability compared globally (top 25)

About the data: Dimensions, based on data exported 13 May 2024.

3.2 Outputs by Australian university

As well as looking at academic disciplines, the project also examined which Australian institutions are producing the bulk of research publication outputs about Indonesia. Table 9 outlines the top Australian institutions publishing research about Indonesia in the last decade. This map of Australian university research strengths firstly reflects the relative size and research capability of different Australian universities (i.e. the Group of Eight are strongly represented), but also legacies of past investments in Indonesian studies initiatives.

As expected, the institutions with strong Indonesia research output are those which have a longstanding investment in Indonesia. For example, Monash University, ANU, the Universities of Sydney and Melbourne have all had relatively strong Indonesia-focused programs. Other universities had notably strong publication numbers both 'with' and 'about' Indonesia regardless, for example, the University of Queensland (UQ) and Griffith University.

	Institution Name	Country	Publications 'about' Indonesia	Proportion of all Australian publications 'about' Indonesia (i.e. / 6,739)
1	Australian National University (ANU)	Australia	790	11.72%
2	University of Melbourne	Australia	683	10.14%
3	University of Queensland (UQ)	Australia	579	8.59%
4	The University of Sydney (USYD)	Australia	514	7.63%
5	Monash University	Australia	449	6.66%
6	UNSW Sydney (UNSW)	Australia	356	5.28%
7	Griffith University	Australia	298	4.42%
8	University of Western Australia (UWA)	Australia	289	4.29%
9	University of Adelaide	Australia	251	3.72%
10	Curtin University	Australia	240	3.56%

About the data: Analytical views – Research Organization – Exported on Feb 14, 2024. Criteria: 'Indonesia*' in title and abstract; Publication Year is 2023 or 2022 or 2021 or 2020 or 2019 or 2018 or 2017 or 2016 or 2015 or 2014; Country/Territory is Australia. Source: Dimensions.

Collaboration strengths by three areas of research

While research publication data can provide some preliminary insights into areas of research activity and strength (as explored in Chapter 3), it does not capture the quality of research, the nature and dynamics of the collaborative relationships, nor account for different publishing cultures between disciplines.

This Chapter seeks to fill these data gaps through closer analysis of three areas of Australia's Indonesia research capability – society and culture, health and medical research, and energy transition research. The information presented draws on expert advice, stakeholder consultations and interviews.

The three focus areas were selected in reference to (a) the analysis of the bibliometric data on the strength of research about and with Indonesia, (b) the KONEKSI program's priorities, and (c) the expertise and guidance of the EAG on areas of current and emerging collaborative strength.

- Society and culture was identified for its long-standing research-based relationships, strong research output, and representing disciplines which are in themselves concerned with the Australia-Indonesia relationship.
- Health and medical research was selected with the publication data in view, as they feature strongly in Australia's research strengths and with strong alignment in research priorities of the two nations.
- The energy transition has been signalled as a leading priority area of bilateral government cooperation, and as a fast-emerging but nascent area of collaboration there is value in better understanding current challenges and future opportunities.

Although beyond the scope of this preliminary work, there are many clusters of research that would be a valuable focus for further analysis. For example, the EAG reflected that environmental science, oceans and agriculture are notable areas of strength that merit future in-depth attention.

4.1 Society & culture research

This section considers Australia's research strengths in society and culture. This lens has been applied to capture disciplines which provide an understanding of history, the economy, culture and community practices, which are also fundamental to mutual understanding and bilateral partnerships. The main research fields explored include Political Science, Archaeology, Historical Studies, Law, Applied Economics, Anthropology, Linguistics, Demography, Cultural Studies, Human Geography, Other Human Society, Religious Studies, Performing Arts and Creative Writing (noting that these reflect 4-digit field of research codes).

Together, these fields of research warrant special attention because they have formed the historical spine of Australia's Indonesia capability, and for the mutual influence that research collaborations have had on these areas. Knowledge. that is culturally-responsive and explores complex socio-economic challenges is also noted by the DFAT-funded KONEKSI program as both "hard to fund and sell," but "critical and valuable to Indonesia's economic transformation".⁴¹ It is with strong interest that we look to these research fields as a core component of Australia's ongoing Indonesia strength.

Australia's collaboration with Indonesia

As highlighted in Section 2.2, society & culture fields dominate ARC funding success. Further to that data, Figure 5 depicts the total number of ARC Indonesia-related research grants in the ten most successful fields of research. Evidently there is strong representation of society and culture disciplines funded by the ARC, with the highest funding dedicated to political science.





Another key metric for analysing Australia's society & culture research capability is through the field known as 'Human Society'. As a two-digit FoR code, Human Society encompasses disciplines such as anthropology, demography, political science, sociology, gender studies and development studies. As shown in Chapter 3, the volume of 'Human Society' publications feature prominently within Australia's Indonesian research overall (recall below).

About Indonesia (2014–23): Number of publications in research category



Co-authorship with Indonesia (2014–23): Number of publications in research category



While research in society and culture may have lower volume of publication output than other disciplines (i.e. such as Biomedical and Clinical Sciences above), this also reflects the different publishing practices between disciplines. Namely, the prevalence of books and edited collections in HASS disciplines compared with journal articles in STEM fields.

These strong publication numbers, even when compared with outputs from STEM fields, reflect the historical strength of Indonesia expertise within Australian universities.

⁴¹ Department of Foreign Affairs and Trade (August 2022). Investment Design, Australia Indonesia Knowledge Partnership Platform. https://www.dfat.gov.au/sites/default/files/koneksi-design-document.pdf accessed 26 July 2024, p.8 and 11.

⁴² This draws on the analysis of publicly available ARC data via Grants Dataset | Australian Research Council, search 'Indonesia*' to obtain all results, accessed 17 April 2024. The data combines projects done 'With Indonesia' (counting grants awarded on the basis of applications that indicate an *intent to collaborate* with Indonesian institutions) and 'About Indonesia' (counting grants that include 'Indonesia*' in the summary provided to the research council for assessment). Like fields that were renamed in different funding cycles have been grouped together.

Australian strengths

To better understand Australia's strengths in society and culture research, the bibliometric analysis was supplemented with consultations involving senior Indonesia experts across these disciplines. It is notable that the EAG had the most extensive representation from society and culture fields, and that more than other focus areas, their reflections have significantly informed the principles and future directions raised throughout this report.

In describing Australia's existing capability, the consultations revealed a deep legacy of relationship- and capability-building between researchers in society and culture fields, with strengths including:

a) Foundational content knowledge

Australia has numerous strengths in Indonesia capability across a cross-section of society and culture fields. Key strengths are stepped out by academic disciplines below.

Political science: One of Australia's strongest fields of Indonesia research by both publication volume and ARC grants.⁴³ Australian political scientists publish research *about* and *with* Indonesia on Indonesian democracy, decentralisation, Islamic politics and electoral politics.

Economics: A key disciplinary area of Australia's Indonesia research strength, and underpinned by a long-standing investment through The Indonesia Project. Since 1965, the Project has published the leading journal on the Indonesian economy, *The Bulletin of Indonesian Economic Studies*. TIP has also become a thriving centre for research on democratic governance and politics in contemporary Indonesia, and for interdisciplinary exchange through its *Indonesia Update* events, with a theme every year that covers an important area of politics, society or culture.

Anthropology and demography: Australian

anthropologists and demographers in particular have long established research links in Indonesia and strong publication records 'about' and 'with' Indonesians. Australian Anthropology has developed a strong body of pure and applied research in Eastern Indonesia, and demographers have close links with the Indonesian census and other data collection bodies. **History:** A foundational discipline in Australia's Indonesia research capability, Australia's historians are known internationally for producing landmark studies of Indonesia's modern history.⁴⁴

Law: Australian Indonesia researchers' strengths in law and related disciplines inform understanding of comparative legal structures, jurisprudence and regulatory frameworks, crime and corruption, and human rights.

Arts and culture: Australian cultural researchers and practitioners collaborate with clusters of Indonesia artists, activists and researchers. Since the early 1990s, the research-informed curation of exhibitions by artists such as Moelyono⁴⁵ have advanced Australians' understanding of Indonesian society.

b) Legacy of capacity-building within relationships

The Indonesia experts consulted emphasised the way their disciplines have built long-term cultures of mentorship and collaboration, resulting in collaborative research cultures that are rich in knowledge exchange.

Work has often involved heavily collaborative activities with Indonesian counterparts, in which Indonesians were recognised prominently on publication outputs as a result. For example, they noted that research often results in edited volumes and special journal issues in which Indonesians appear as sole authors, or co-authors with other Indonesians or Australian researchers. Consultations suggested that collaborations often involve an emphasis on promoting sole-author Indonesian authorship of articles, and have moved to supporting Indonesians to publish major, book-length work.

c) Collaborative work in areas of Indonesian strength

The collaborative nature of the Australia-Indonesia research partnerships is partially evident in the existing bibliometric data, where Australian HASS researchers writing *about* Indonesia have increasingly published with Indonesian partners. However, it was also notable that some areas of society and culture research performed well when aligned with areas of Indonesia's strengths. Table 10 demonstrates key fields of study informed by collaborative work which align map to areas of Indonesian strength.

⁴³ Since 2002, political science has been the most successful field of research for ARC grants. It was the primary field of research for 56 ARC grants with Indonesia, 28 about Indonesia. The second was Archaeology, 45 and 17 respectively.

⁴⁴ Feith's Decline of Constitutional Politics in Indonesia (1962), Crouch's Army and Politics in Indonesia (1978) or Ricklefs' History of Modern Indonesia (1981).

⁴⁵ https://www.flinders.edu.au/museum-of-art/exhibitions/past-exhibitions/2018/moelyono

Table 10: Society and culture fields where high volumes of research published 'about' Indonesia also involved Indonesian researchers (2014–23)

Australian field of research	About Indonesia	With Indonesia	Overlap (about and with)	Overlap % of 'about Indonesia'
Commerce, Management, Tourism & Services	571	695	343	60%
Education	292	377	161	55%
Philosophy and Religious Studies	190	153	91	48%
Economics	335	240	137	41%
Human Society	1,407	779	524	37%
History, Heritage, and Archaeology	390	201	142	36%
Language, Communication and Culture	267	194	91	34%

Source: Dimensions. Accessed 10 June 2024.



Figure 6: Indonesia's fields of research by volume, 2014–23 (publication output by field)

The field of Commerce, Management, Tourism and Services produces a high volume of publications in collaboration with Indonesian researchers, and is also the field of Indonesia's highest research output (see Figure 1 and Table 4 in Chapter 3). Similar comparisons can be made in other fields (Figure 6).

Consultations suggested that these intersections could be further explored to unpack the value and linkages to Australia's Indonesia knowledge capability.

Challenges

The experts consulted for this report raised a number of challenges that pose a threat to Australia's Indonesia research capability. These were articulated as relevant not only to society and culture fields, but also carrying implications for quality collaboration across other areas of research.

a) Language capability gaps

Several participants raised that fewer young Australian scholars are investing time in mastering Indonesian. While language capability is tracked largely through a teaching lens and by enrolment data (out of scope for this report), consultations suggest a downward trend on research associated with this capability.⁴⁶

This has implications for research in the deep groundwork required to understand Indonesia's past or present through those who have the linguistic capability to do fieldwork, deal with primary evidence, or discern long and complex trends. At the same time, consultations noted that Indonesian scholars wanted to study in Australia with established experts in Indonesian Studies, who have language mastery.

⁴⁶ This correlates with publicly available data from ACICIS, demonstrating a decline in Indonesian language study in secondary and tertiary educational institutions over the last 10–15 years preceding 2022. See: ACICIS, 2023. "Indonesian Language in Australia." https://www.acicis.edu.au/data/ accessed 8 July 2024. Using data compiled by LCNAU for the National Languages Campaign.

b) Knowledge capability not being replaced

In addition to language, experts from several universities and research fields noted the lack of Australians undertaking Indonesia-rich research. Professors told us that they have more Indonesian students than local students seeking supervision for higher degrees by research in Indonesia-relevant topics. They also reported that professors in history, economics, and culture are retiring and not being replaced.

Consultations raised that despite substantial backing from DFAT and the ARC, some of Australia's pipeline in society and culture research appear to be fading. The capability gaps in Indonesian language may be one reason for this, however more work would be needed to trace the capability pipeline. In terms of research collaboration, these reflections were described as a risk to a broader national threshold of capability.

c) Potential for publication metrics to cloud benefits

On Indonesia's side, (Australian) society and culture researchers report, the Government of Indonesia's policy encouraging Indonesian scholars to participate in international scholarly life is overall very positive. It has broadened research opportunities. However, they also cautioned that the potential for the 'pressure to publish' (also seen in Australia and elsewhere) could lead to pressure to co-publish in pursuit of research metrics over substance, with the quality of collaboration and the research suffering, with compounding opportunity costs over the medium and long term.

Opportunities

Due to the far-reaching value of the content knowledge generated by society and culture disciplines, consultations highlighted a wide range of opportunities to further capitalise on this core component of Australia's knowledge capability. A number of the opportunities are captured more thoroughly in Chapter 5. However, opportunities specific to society and culture disciplines include:

a) Capitalise on deep legacies of knowledge exchange

Participants said that their Indonesian counterparts often valued the scholarly and independent perspectives they find in Australia. These connections have helped build enduring relationships based on trust and reciprocity and are a significant advantage to Australia's interests in the bilateral research relationship.

b) Explore areas of Indonesian strength

Areas where Indonesia's research output indicates an area of strength, such as Philosophy and Religious studies, or Education⁴⁷ could be fruitful areas for future focus, encouragement and investment.

There are also opportunities to consider collaboration on global or comparative topics, or political trends in the Southeast Asian region or Pacific Studies.

c) Build on existing trust

Participants noted that the deep trust cultivated from within society and culture collaborations has bilateral benefits, with potential regional returns. They expressed that many of the issues explored in society and culture research are regional issues, and that as Australia seeks to confront emerging problems at regional levels, these existing relationships would be a core asset to productive partnerships. They saw significant opportunity to building from bilateral collaboration strengths into effective regional collaboration.

d) Bring society & culture knowledge to multidisciplinary problems

The cross-disciplinary EAG was of the view that Australia's strengths in society and culture should be leveraged to provide relevant expertise in establishing and framing multidisciplinary knowledge partnerships. Knowledge of Indonesian society, culture, and the state could inform research in prospective areas such as the energy transition. These opportunities are further considered in Chapter 5.

⁴⁷ Indonesian researchers publish twice as much as Australia's in Education (overall output of 70,000 publications 2014–23 compared with Australia's 34,500); and publish more than twice as much as Australia's in Philosophy and Religious Studies (39,000 Indonesian publications compared with Australia's 14,500), reflecting the strength of Indonesia's Islamic university sector.

4.2 Health and Medical Research

Health and medicine was identified early in this project as a long-standing area of collaboration between Australia and Indonesia, and one which is heavily represented by publication output data. As shown in Chapter 3, the volume of health and medical research publications loom large within Australia's Indonesian research overall, across both 'about' Indonesia and in co-authorship 'with' Indonesia (recall – below).

About Indonesia (2014–23): Number of publications in research category



Co-authorship with Indonesia (2014-23): Number of publications in research category



Top sub-fields within these broad areas included Clinical Sciences, Health Services and Systems, Public Health, Medical Microbiology and Nursing.⁴⁸ In terms of research based on the condition or disease categorisation, publications fell most strongly in clinical research, followed by infectious diseases and prevention.⁴⁹

⁴⁸ This was consistent across co-authored publications *and* where those publications also included Indonesia as a keyword. "About the data: Analytical views – Fields of Research (ANZSRC 2020) – Exported on May 29, 2024. Criteria: Publication Year is 2023 or 2022 or 2021 or 2020 or 2019 or 2018 or 2017 or 2016 or 2015 or 2014; Country/Territory is Indonesia; Country/Territory is Australia; Fields of Research (ANZSRC 2020) is 32 Biomedical and Clinical Sciences or 42 Health Sciences. AND: "About the data: Analytical views – Fields of Research (ANZSRC 2020) – Exported on May 29, 2024. Criteria: "Indonesia*" in title and abstract; Publication Year is 2023 or 2022 or 2021 or 2020 or 2019 or 2018 or 2017 or 2016 or 2015 or 2014; Country/Territory is Indonesia; Country/Territory is Australia; Fields of Research (ANZSRC 2020) – Exported on May 29, 2024. Criteria: "Indonesia*" in title and abstract; Publication Year is 2023 or 2022 or 2021 or 2020 or 2019 or 2018 or 2017 or 2016 or 2015 or 2014; Country/Territory is Indonesia; Country/Territory is Australia; Fields of Research (ANZSRC 2020) is 32 Biomedical and Clinical Sciences or 42 Health Sciences.

^{49 &}quot;About the data: Analytical views – Research, Condition, and Disease Categorization – Exported on May 29, 2024. Criteria: Publication Year is 2023 or 2022 or 2021 or 2020 or 2019 or 2018 or 2017 or 2016 or 2015 or 2014; Country/Territory is Indonesia; Country/Territory is Australia; Fields of Research (ANZSRC 2020) is 32 Biomedical and Clinical Sciences or 42 Health Sciences.

Australia's collaboration with Indonesia

Despite this volume of outputs, Indonesia is not a major partner in health and medical research, with Indonesia featuring 40th in Australia's international co-authorship activities. Australia's record of publication-based collaborations align more strongly with other Southeast Asian countries, such as Malaysia and Thailand, well before Indonesia (Table 11).

Of the research publications that did involve co-authorship, top funding agencies were Australia's NHMRC, followed by the UK-based Wellcome Trust and the USA-based National Institute of Allergy and Infectious Diseases (NIAID) (Table 12).

Table 11: International collaborations with Australia in the fields of Biomedical and Clinical Sciences or Health Sciences

All time			2014-23		
Rank	Collaboration with Australian by researcher from	Publications	Rank	Collaboration with Australian by researcher from	Publications
1	(Australia)	(885,708)	1	(Australia)	(435,497)
2	United States	122,794	2	United States	81,761
3	United Kingdom	96,214	3	United Kingdom	65,067
4	Canada	43,367	4	Canada	31,416
5	Germany	34,978	5	China	25,520
6	China	32,884	6	Germany	24,772
				•••	
14	Japan	15,754	15	Japan	10,875
19	Singapore	11,068	19	Singapore	8,054
25	South Korea	7,017	24	South Korea	5,632
26	Malaysia	6,321	26	Malaysia	4,994
27	Thailand	5,871	30	Thailand	4,093
40	Indonesia	3,173	40	Indonesia	2,470
43	Vietnam	2,874	42	Vietnam	2,372
58	Papua New Guinea	1,261	65	Papua New Guinea	740

About the data: Analytical views – Country/Territory – Exported on May 07, 2024. Criteria: Country/Territory is Australia; Fields of Research (ANZSRC 2020) is 32 Biomedical and Clinical Sciences or 42 Health Sciences. AND Analytical views – Country/Territory – Exported on May 07, 2024. Criteria: Publication Year is 2023 or 2022 or 2021 or 2020 or 2019 or 2018 or 2017 or 2016 or 2015 or 2014; Country/Territory is Australia; Fields of Research (ANZSRC 2020) is 32 Biomedical and Clinical Sciences or 42 Health Sciences.

Table 12: Top Funders of Health and Medical research involving co-authorship between Australian and Indonesian researchers 2014–23

Funder Name	Country	Publications
National Health and Medical Research Council (NHMRC)	Australia	301
Wellcome Trust (WT)	UK	190
National Institute of Allergy and Infectious Diseases (NIAID)	USA	158
Medical Research Council (MRC)	UK	122
Bill & Melinda Gates Foundation (BMGF)	USA	119
Department of Foreign Affairs and Trade (DFAT)	Australia	102
World Health Organization (WHO)	Switzerland	84
National Cancer Institute (NCI)	USA	74
European Commission (EC)	Belgium	70
Eunice Kennedy Shriver National Institute of Child Health and Human Development (NICHD)	USA	64
Australian Research Council (ARC)	Australia	52
Department of Health and Aged Care (DoH-Au)	Australia	50

"About the data: Analytical views – Funder – Exported on May 29, 2024. Criteria: Publication Year is 2023 or 2022 or 2021 or 2020 or 2019 or 2018 or 2017 or 2016 or 2015 or 2014; Country/Territory is Indonesia; Country/Territory is Australia; Fields of Research (ANZSRC 2020) is 32 Biomedical and Clinical Sciences or 42 Health Sciences."

Consultations

Consultations were conducted to broaden the publication data and better understand collaborations in health and medical research. It is noted that there was minimal scope to conduct interviews in health and medical, and that further insights could be gained through a more comprehensive survey of experts. It is also noted that a substantial proportion of health and medical research in Australia is conducted in independent medical research institutes (MRIs), and their stakeholder positions should be considered as distinct from research conducted in universities.

Even though publication output has been strongest in the last five years, consultations pointed to long-running Australian engagement with Indonesia in health and medicine, covering at least three decades. Participants described the collaboration activities as having been very fruitful, but could be strengthened. They also felt that Indonesia is a logical partner for Australia in health and medical research, and a partnership worth continuing for mutual benefit.

Australian strengths

a) New paradigms

Participants noted that there has been an important shift in global health research since the COVID-19 pandemic towards better understanding the importance of true collaboration, multidisciplinarity and partnership. This has placed new scrutiny and care toward understanding the power dynamics in relationships, the way research cultures differ across borders, and how inequalities have impacts that reach far beyond a nation's wealth or level of development.

b) Close relationships

Participants suggested that some organisational relationships are sustained by strong but narrow ties to individuals (i.e. organisation leaders) in Indonesia. Though sometimes fragile, these people-to-people links were built on long periods of collaboration and trust, and currently sustain viable pathways to large-scale valuable collaboration.

In this vein, participants highlighted how agricultural research has several intersections with health and medical research work, and spoke highly of the valuable role ACIAR has played in fostering favourable relationships and collaborations across decades. Further work to better understand the reasons behind this success, whether it be the sustained long-term nature of the researchers that produce better collaborations, the topics they are tackling, or the locations they are working in would be highly instructive.

Challenges

At the same time, participants noted that there were significant challenges in research collaboration, and much more work could be done than at present to address the barriers to greater levels of collaboration. Some of the key challenges raised in consultations are described below.

a) Difficulties in the exchange of equipment and research matter (i.e. samples)

Participants noted increasing difficulty in recent years to overcome regulatory barriers associated with undertaking research. Some challenges were specific to research – for example, the heavy regulations restricting the transfer of biological materials/samples into and out of Indonesia acted as an impediment to research in a range of fields, such as mechanisms of disease across human, agricultural and zoological areas.

Other exchange barriers were not specific to research, but significantly impact research-oriented efforts. For example, controls on the permits and licenses on equipment in Indonesia place burdens on Australian organisations wanting to send scientific and medical equipment to support laboratory work.

b) Challenges in expertise exchange

Consultations revealed challenges in building and maintaining people-to-people links, particularly through the exchange of PhD and post-doctoral students. Participants noted that although they had the ability to take on higher degree and post-doctoral students from Indonesia, this is largely a one-sided exchange of personnel.

One constraint raised was that Indonesian research partners must take on significant legal responsibility, criminal responsibility, and expose themselves to new expectations and demands from Indonesian authorities when hosting an Australian. At the project activity level, another participant raised that when the in-country collaborative relationships and projects are so precious, it is not appropriate to send more junior researchers to represent and navigate the partnership.

c) Challenges in political dynamics

Over time, participants shared that ideological adaptations and political pressure had seen some Indonesian organisations dissolve Australian ties, or significantly weaken collaboration at the organisational level. The strength and viability of partnerships was noted to vary significantly across different parts of Indonesia, with easier access to Western Indonesia compared to the East. Sometimes this resulted in seeking resource-intensive work-arounds for the often dynamic and opaque conditions for collaboration. Other times, Australian partners sought to proactively moderate their opportunity-seeking to fit both perceived and real barriers for knowledge exchange. In the view of some stakeholders consulted, these challenges led to far greater progress in research collaborations with other partners in South East Asia, such as Malaysia, who some viewed as fostering more favourable conditions for research.

Strategies to help overcome these challenges are explored further in Chapter 5.

Opportunities

Despite these challenges, consultations revealed a series of opportunities that could both strengthen existing collaborations and help establish robust and effective new partnerships.

a) Pursue the global health lens

Participants saw significant opportunity for Australia to pursue and to continue working with Indonesia in the global health space, especially through mutual interest in biosecurity and public health. These paradigms were seen as open to incorporating multidisciplinary insights, and local, human-centred perspectives, which were identified as valuable frameworks for collaborative work. They were also raised for their strength in representing the growing agenda relating to the decolonisation of global health, with relevance to how and with whom collaborations are developed and operate.

It is noted that opportunities in public health have recently expanded through updates to the DFAT initiative Partnerships for a Health Region (2022/3-2026/7), which for the first time has included a specific stream related to noncommunicable diseases. This was viewed as a fruitful area for future and ongoing partnership.

b) Value local engagement

Consultations suggested that health decision-making is very decentralised in Indonesia, and that working with local, small-scale universities who are engaged with provincial governments is critical. They also noted that many Australian universities still tend to gravitate towards high-profile Indonesian university partners, and that there would be opportunities to broaden academic relationships, especially in health.

c) Use multidisciplinarity to understand barriers as they emerge

In terms of the enduring logistical and structural barriers to medical research, consultations revealed that collaborations could be further supported by incorporating multidisicplinary expertise. Combined knowledge could help to identify barriers as they emerge for researchers (both real and perceived), and also work to create stronger feedback loops with government.

d) Support capacity-building

Participants offered that Indonesia's health publication metrics and ability to generate and sustain quality personnel (i.e. doctoral students) in core and related fields had significant potential for future growth. Stakeholders shared that explicit recognition of the value in funding research capacity-building could expedite Indonesia's potential in health and medical research, and was among the things that Australia is exceptionally well-positioned to support. They acknowledged that program-oriented funding was important, but that more strategic links could be made from these existing funding structures to strengthen Indonesia's health and medical pipeline in research and academic skills. This is explored further in Chapter 5.

Energy Transition Research 4.3

The energy transition was identified during this project as a key area of interest to broaden bilateral collaboration and future research partnerships with Indonesia. As indicated by the 2023 Joint Communique from Australia's Prime Minister and Indonesia's President, both governments identified 'a just and orderly transition to net-zero emissions' as one of their top priorities.⁵⁰ Further, in November 2023, the countries announced a new MoU to establish collaboration on electric vehicles, including mapping supply chains, fostering joint scientific and research studies, and fostering new business-to-business links.⁵¹ Research partnerships and collaborations will be critical to achieve these goals.

⁵⁰ Prime Minister of Australia and President of the Republic of Indonesia (4 July 2023). "Joint communique." https://www.pm.gov.au/media/jointcommunique-australia-indonesia-annual-leaders-meeting, accessed 12 June 2024.

⁵¹ Minister for Industry and Science, the Hon Ed Husic MP (24 November 2023). "Indonesia and Australia cooperation on electric vehicles." https://www.minister.industry.gov.au/ministers/husic/media-releases/indonesia-and-australia-cooperation-electric-vehicles accessed 12 June 2024.

Data collection approach

It is worth noting that the energy transition is different to other areas research collaboration selected for this report. It is not a distinct area of knowledge that can be captured by examining particular academic disciplines, but rather, spans a large range of research endeavour and disciplinary expertise. It is also a rapidly changing area, with significant new focuses, efforts and priorities raised in recent years.⁵² For these reasons, we have elected not to draw historical publication information from the *Dimensions* database as an indication of its strength; we have instead focused on consultation with energy stakeholders as the primary source of data.

As part of data collection, Australian Government, industry and research energy sector stakeholders were gathered for a roundtable to discuss current strengths, gaps and opportunities. Their insights are captured below.

Australian strengths

a) Existing good-will and trust

Stakeholders noted that there was a discernible level of good-will from Indonesians toward Australia in the energy space – stemming from 'soft' connections related to personal and educational links. Participants agreed that these were very real and very valuable for progress, positioning Australia as an already-trusted partner across a broad range of potential energy research related activities.

Paired with this, Australia's long history of major export project development, and reputation as a stable, trusted trading partner was highlighted as equally valuable in the energy space. Participants noted that focus on returning the good-will by helping Indonesian partners could have positive externalities in building out trade and commerce as well.

b) Existing energy transition knowledge

In many ways, Australia is navigating energy transition challenges *now* that many nations will face in the future. Some progress is happening fast; for example, Australia is installing solar and wind at the fastest rate per capita of any nation.⁵³ At the same time, sector leaders have recently noted that Australia's funding commitments to research could be more strategic.⁵⁴ This was identified as a useful point for sharing lessons learned, as Australia also seeks to direct efforts into local and human-led perspectives.

Challenges

Despite acknowledging some commonalities across Australian and Indonesian energy sectors, roundtable participants raised a number of substantial gaps and differences to be considered when mapping a path to stronger collaboration. They agreed that there were significant asymmetries in capability, and also the nature of the challenges facing Australia versus Indonesia. The range of challenges raised are detailed below.

a) Different sector relationships and transition starting points

It was acknowledged that Indonesia has a fundamentally different energy mix to Australia. Indonesia is considered to still have a highly regulated energy sector, with substantial government-related co-investment across coal and geothermal sectors. As a result, some of the transformations which have taken place in Australia's more diversified context would not necessarily translate well to the Indonesian structural or regulatory landscape. Challenges include energy access across the Indonesian archipelago (grids and links) and determining the particular niches that hydrogen will potentially play in the Indonesian energy system.

Stakeholders also noted that different configurations of government-to-research-institute relationships across Indonesia compared to Australia strongly influence the way that problems are conceptualised and defined when compared to Australia. The way in which collaboration is sought within these frameworks will have important impact for the future.

⁵² ERICA Chair Professor Peta Ashworth and SOERC 2024 Organising Committee (2024). "2024 Conference Communique." ERICA. https://www. erica.org.au/soerc-2024-communique accessed 12 June 2024.

⁵³ The Hon Angus Taylor MP (11 March 2022). "Australia leads world in rooftop solar as share of renewables jumps to 35%." https://www.minister. industry.gov.au/ministers/taylor/media-releases/australia-leads-world-rooftop-solar-share-renewables-jumps-35 accessed 12 June 2024. And: Stocks, M., Blakers, A., and Baldwin, K. (25 September 2019). "Australia is the runaway global leader in building new renewable energy." The Conversation. https://theconversation.com/australia-is-the-runaway-global-leader-in-building-new-renewable-energy-123694 accessed 12 June 2024.

⁵⁴ As stated in the State of Energy Research Conference 2024 Communique, "Despite the efforts by governments and industry to increase the deployment of renewable energy sources, we are sadly lagging behind in investment in energy research, impacting our ability to develop new technologies and new approaches to an energy transition that meets the needs of the Australian environment." ERICA Chair Professor Peta Ashworth and SOERC 2024 Organising Committee (2024). "2024 Conference Communique." ERICA. https://www.erica.org.au/soerc-2024-communique accessed 12 June 2024.

b) Inroads to collaboration are currently narrow

As an emerging area of collaboration, stakeholders noted the current lack of diversity in making inroads into the Indonesian energy sector. This meant knowledge exchange was often dominated by focus on energy transmission capacity, rather than decarbonisation or renewable solutions.

Respondents suggested an intensification of partnerships between the Australian Government and Australian researchers would be beneficial to reaching appropriate and effective energy stakeholders in Indonesia. This was seen to be particularly important for sparking engagement around renewables and energy transition aspects of energy research.

"I have more conversations with Australians about Indonesia than I have with Indonesians. We could broaden that pipeline in terms of the dialogue." – Roundtable participant

c) Energy transition efforts are pervasive and take time

Stakeholders emphasised that governance, regulatory, and structural settings have provided a critical foundation for many of the technical aspects of energy transition in Australia, and that progress continues to build the requisite groundwork in these respects. While Australia is not without its own challenges in these areas, participants raised a need for caution in creating linkages with Indonesia without foregrounding that substantial groundwork is needed to support sector transformations. For example, participants cautioned that focusing on specific technological advances should come with the recognition that these cannot be implemented in an adhoc, tacked on way.

However, stakeholders reflected that this raised positive opportunities for capacity building and knowledge sharing. For example, engaging local perspectives to identify areas of strength was identified as critical to better understanding the different operating environments.

d) Vast regional differences in priorities across Indonesia

Stakeholders noted the national, provincial and districtlevel energy challenges in Indonesia had vastly different community needs. For example, many rural and remote Indonesian communities are without basic power. In the wake of Indonesian decentralisation efforts, provincial governments have the demands of energy transition contextualised by huge demands for basic electrification. This was acknowledged as a strategic choice still facing Australian energy research engagement – whether to focus on transforming the bulk of consumed energy, or focusing on the margins and disadvantaged areas. Participants noted that the value of collaboration might be greater on the periphery – with potential lessons for Australia as well.⁵⁵

Opportunities

Participants were optimistic about the potential for effective collaboration with Indonesia on energy. Although they acknowledged significant challenges lie ahead, they advocated for focusing on opportunities that would provide practical solutions, targeting structural barriers as a way forward. Given the emerging nature of this area of collaboration, consultations revealed a large selection of opportunities that could specifically strengthen relationships in energy transition research.

a) Acknowledge gaps in understanding

Stakeholders noted that although Australia has begun mapping its energy research capability, significant work is needed to build this as a comprehensive and cohesive set of strengths. Similarly, they acknowledged that Australia's understanding of Indonesia's energy interests also remains limited. It was suggested that overcoming these knowledge gaps could be a fruitful starting point for open and curious dialogue on collaboration potential.

While the easiest starting points are the 'known' areas of mutual interest and capability, it was acknowledged that, for Australia-Indonesia cooperation, these do not yet likely cover areas of greatest comparative advantage. Considering research strengths from a global perspective would be essential to helping identify Australia's points of difference from other international players. It was also suggested that using research expertise to understand this landscape would be a critical part of the process.

b) A need for human-centred approaches for a 'just' transition

Participants noted that while Australia already possesses much of the technical knowledge for energy transition, in recent years focus has shifted to calls for human-centred approaches and greater integration of social sciences and humanities knowledge within energy research.

⁵⁵ Quilty, S., Riley, B., White, L. Jupurrurla, N. (14 June 2023). "Many First Nations communities swelter without power. Why isn't there solar on every rooftop?" The Conversation. https://theconversation.com/many-first-nations-communities-swelter-without-power-why-isnt-there-solar-on-every-rooftop-204032 accessed 12 June 2024.

These would help ensure that a smoother integration and acceptance of transition technologies across the Australian population.⁵⁶

Stakeholders noted that as Australia looks to people-centric frameworks, collaboration opportunities could be sought by posing similar questions in the Indonesian landscape. It was recognised that significant benefits lie in working with locals to identify areas they feel are important or areas of strength. In particular, framing issues with a focus on place based community perspectives was identified as a productive way to both build-in knowledge-sharing, and think openly and reflexively about feasibility in new contexts.

c) Build awareness of energy transition options

Stakeholders highlighted that due to the embedded nature of energy transition efforts, a common impediment can be a simple lack of awareness of exactly what measures will be most impactful for each context. The gap between perceived and actual challenges and benefits can be the difference in making impactful change. It was suggested that Australia and Indonesia had more work to do in unpacking and identifying where mutual benefits, interests and alignments could be found. Examples raised in this vein include surveys and advice on the viability of renewable energy sources, pumped hydro for energy storage, undersea cables and capitalising on green exports.

d) Support knowledge-sharing mechanisms with research

To expand strategic engagement in energy, stakeholders saw opportunities to foster more relationships with those at the front line of Indonesian and Australian energy decision-making. They noted that collaborations should be considered from both top-down and bottom-up to ensure the greatest impact arises from such partnerships. Respondents noted that these could evolve from both strengthening existing networks and generating new ones, through:

- Cross-sector exchange: Structured knowledge sharing mechanisms like secondments and internships. These deliberate personnel exchanges were considered more effective than relying on incidental routes such as conferences.
- **Government:** Guidance from existing players, such as DFAT and other Australian Government agencies, was seen as key to providing advice on Indonesia's interests and engagements. Participants noted we are fortunate that the Australian Government has invested in government-to-government exchange.

- **Industry:** Industry practitioners were identified as excellent facilitators of research needs, with potential for existing Australian-Indonesian connections to be drawn out toward this goal. Overall, engagement across research and industry highlighted as a core component for generating solutions in energy.
- **Research:** Universities were recognised as representing a core resource for establishing better linkages across the energy sector. Respondents suggested that higher education training, multidisciplinary research teams, and people-to-people linkages provided foundational skill-building, settings for combined energy and cultural expertise, and pathways for knowledge-sharing.
- Research Alumni: Indonesian graduates working in the Indonesian energy sector were suggested as valuable networks for engagement. Additionally, Australian HASS alumni coupled with Indonesia capability were noted as valuable networks to help frame common energy problems. Respondents suggested that institutional university knowledge and relationships could be drawn on to help identify these networks of active decisionmakers working in the Indonesian energy sector.
- Resource existing interests: Stakeholders specifically noted that other countries across Southeast Asia are looking to organisations such as the Australian Energy Market Operator (AEMO) as housing significant expertise and steering Australia's energy transition process. In this vein, participants suggested that Australia could first identify any interests from Indonesia into the Australian energy sector, and then pursue whether and how these players could be supported to engage and share insights with Indonesia.

e) Create feedback loops from Ministerial dialogues

Participants noted that research opportunities could be structured in different ways to enable a range of partners to better inform and feed into government activities. One example provided was that existing Ministerial dialogues in energy have revealed valuable information about the interests and future aspirations of the Indonesian government in the energy transition. It was suggested that work should be done to integrate these dialogues with the Australian energy research sector, with the goal of creating feedback loops between the Australian Government and Australian research, to seek greater mutual understanding of possible goals for collaboration.

⁵⁶ Prime Minister of Australia and President of the Republic of Indonesia (4 July 2023). "Joint communique." https://www.pm.gov.au/media/jointcommunique-australia-indonesia-annual-leaders-meeting, accessed 12 June 2024.

Principles to underpin enduring and mutually beneficial research collaboration

This report has so far focused on collaborations between Indonesian and Australian researchers at a disciplinary, field or broader thematic range with a view to identify where technical expertise or disciplinary knowledge transfer opportunities may lie – including in shoring up existing strengths that may be waning, and also in considering emerging areas of mutual interest.

The consultations and analysis reveal this is only one part of the picture, if the aim is to build mutually beneficial and enduring bilateral research partnerships. While Australia-Indonesia research collaboration and exchange has deep roots, it is also relatively nascent compared to Australia's other research partners. The growth of co-authored publications in the last 5–10 years demonstrates the relative youth of the relationship, which was built to large extent under an aid and development framework.

While disciplinary-based knowledge exchange is vital, of perhaps equal importance is looking to the different research cultures as a lens to reducing barriers and maximising opportunities for knowledge exchange. To help accelerate the transition from the aid and development lens to a knowledge-based relationship, it will be important to address systemic issues in research collaboration, and strive for partnerships that seek to address global challenges of mutual interest that could strengthen research cultures in both countries. This Chapter draws on consultations and interviews with experts to highlight what principles for international research collaboration could underpin engagement moving forward. It also explores specific areas of bilateral dialogue on a research ecosystem level (as opposed to disciplinary or field level), that would be of mutual benefit to both Australia and Indonesia.

5.1 Acknowledge asymmetric research cultures

The consultations revealed several challenges in collaboration that are common to many international research partnerships, as well as some that are specific to Australia-Indonesia work. Stakeholders felt that increased awareness of challenges, and open-minded approaches to finding solutions would improve collaborative relationships in future.

Actively seek equality in partnerships, and value local perspectives

Stakeholders noted that English language should not be seen as a black-and-white measure to define research relationships. Even when collaborators may lack strengths in English or technical skill, the expert participants saw opportunities for more inclusive modes of recognition that seek to value local perspectives, cultural currency and local stakeholder insights.

Share Australian 'research system' knowledge

As well as recognising the different expectations facing Indonesian academics, consultations raised that Australian scholars could share how Australian academics and universities structure and manage their relationships, to open different ways of framing partnerships. Although pockets of this knowledge exchange are happening already, stakeholders suggested that greater capacity-building could be achieved through mentoring on how Australians navigate publishing processes, funding opportunities, research facilities, and government and industry linkages.

Broaden relationships through pockets of excellence

Some participants noted there is pressure from Australian universities to deepen collaboration with the 'best' Indonesian partners, often pointing to the major, centrally-located Indonesian universities. This contrasts with a focus from the Indonesian Government to broaden engagement into outer regions. To bridge disparities, consultations noted that there is opportunity for Australia to value and support 'pockets of excellence' that exist across a wide range of Indonesian universities, to seek fruitful and more diverse knowledge exchange that can still align with Australian interests.

Broaden relationships through academic fields

Consultations suggested that broadening research relationships could be supported through strengthening people-to-people pathways. For example, additional support and activities could be dedicated to help researchers find one another within their particular fields of research. The experts consulted suggested that disciplinary incentives to build expertise and knowledge could encourage increased personal connections both within and beyond the more prestigious Indonesian universities.

An Indonesian scholar compares Australia and Indonesia's research systems

Australian and Indonesian academics operate in very different work environments. In Indonesia, since colonial times, the government has always become the main source of funding with direct intervention in the recruitment and promotion of senior personnel in universities, setting the institutional direction, research agenda and curricula. Most prominent scholars work in state universities and they are government employees. While scholars in the so-called liberal democracies are not entirely liberal or liberated either, the idea of such autonomy is at least deemed desirable, and to some limited extent, it is expected and available. In contrast, in Indonesia, the idea of autonomous institutions, independent research work or pure research primarily for intellectual inquiry is largely absent or regarded with suspicion.

Partnership with Indonesian scholars or institutions requires an adequate degree of mutual understanding of and respect for these differences. It needs to recognise the challenges they may entail in operation. and how to mitigate unwanted risks. These matters include sensitive issues such as division of labour and responsibilities, intellectual attribution of the outcome and financial management. It is common in Indonesia to have allocated research funds disbursed directly to the private bank accounts of the researchers (as stipends or honoraria), instead of being left in the administrative management of their home institutions for supervised use by researchers. With a minimum salary, Indonesian scholars earn extra income from research projects. Researchers may be additionally paid for each published article in peer-reviewed journals.

5.2 Integrate capability-building

A key message heard across multiple discipline areas was a desire for opportunities to continually build research capacity. Participants noted that externally funded research activities were often focused on outcome-driven activities that had benefits within the life of the project, but lacked a long-term strength-building lens. This meant that the research relationships often dissolved upon project completion, with limited ability for researchers to carry forward new skills.

Stakeholders shared that explicit recognition of the value in funding research capacity-building could expedite Indonesia's potential in health and medical research, and was among the things that Australia is exceptionally well-positioned to support. They acknowledged that program-oriented funding was important, but thought that more strategic links could be made from these existing structures with opportunities to strengthen Indonesia's health and medical pipeline in research and academic skills.

Allow research capacity-building within existing program funding

Participants felt it was possible to seek long-term capacity-building within existing mechanisms, through efforts such as:

Integrate quality teaching opportunities

Respondents suggested that providing explicit and genuine academic opportunities for PhD students within programmatic work would have considerable benefits. The quality of teaching and supervision not only influences whether the student completes the higher degree, but also opens the possibility for longer-term mentorship, with implications for the longevity and strength of research relations overall.

Integrate supervision mentorship opportunities

Participants suggested that co-mentoring opportunities within programmatic work would be extremely beneficial, and build research supervision skills in their Indonesian counterparts. It was noted that supervisor mentorship has been something made possible through some DFAT-funded work, but stakeholders believed this was a critical component and could be up-scaled.

Support mentorship on international academic publishing

Indonesian academics are strongly motivated to publish internationally, but sometimes lack the skills and experience to do so effectively. Beyond pure language fluency, important international academic skills include framing work for a research audience, strategies for academic publication, and awareness of 'paper mills' and predatory publishing practices.⁵⁷ Respondents noted that collaboration would be heightened with increased Indonesian capability in these skills, and that mentorship could help provide tools for thinking about research in international terms.58

Allow practical circumstances for skill-building

Participants also emphasised the value of people-to-people engagement in building research skills, whether through supporting English learning through shared on-campus offices, or providing tools and mechanisms for cooperation. These practical elements were highlighted as essential building blocks for cooperation.

Strengthen the research pipeline

Although analysis of tertiary education and higher degrees were out of scope for this report, it is important to note that collaborations are often generated through these foundations. Consultations noted that there are visible gaps in the research pipeline currently impeding more mature collaborations.

⁵⁷ Predatory publishing practices involve academic journals preying on academics seeking career progressions, taking payment from authors without facilitating proper peer review, often resulting in low-quality publications. See here for the rise of predatory publishing practices: Prodita Sabarini (12 March 2021), "Indonesia should stop pushing its academics to chase empty indicators" Nikkei Asia: Opinion. https://asia.nikkei.com/Opinion/Indonesia-should-stop-pushing-its-academics-to-chase-empty-indicators accessed 13 June 2024. And here for the erosion of research integrity incentives: Y. Nugroho and B. Muhtadi (13 May 2024). "Hidden Costs of Academic Dishonesty: The Case of Indonesia." Fulcrum: Analysis on Southeast Asia. https://fulcrum.sq/hidden-costs-of-academic-dishonesty-learning-from-indonesia/ accessed 13 June 2024. On the global threat to research integrity of paper mills, see accessed 13 June 2024.

⁵⁸ It was noted that DFAT has funded some research training with key components emphasising English language writing in the past – but that the options to sustain this mentorship support was often limited within current funding models.

5.3 Integrate cultural capability into new collaboration areas

The consultations across the Australian research sector revealed a wide spectrum of familiarity in collaborating with Indonesia: this is to be expected as new priorities emerge. However, in order to capitalise on Australia's existing Indonesia knowledge capability, the report findings suggest that new, emerging and even established research areas would do well to welcome and build in different disciplinary perspectives.

Emphasising multidisciplinary perspectives helps to draw Australia's existing deep Indonesian cultural expertise together with topic experts to tackle new problems. At the outset, this can mitigate collaboration risks, such as assumptions that Australian strengths will automatically be transferrable to different contexts. More fruitfully, this also helps ensure that problems are framed in open and receptive ways to invite engagement from Indonesian counterparts.

The EAG is of the view that Australia should not overestimate the preparedness of its researchers for collaborative research with Indonesian counterparts, and that Australia's strengths in political science, law, and society & culture should be leveraged to provide relevant expertise in establishing and framing collaborative partnerships and research agendas. These skills were noted to be particularly important in emerging areas such as the energy transition.

What does multidisciplinary mean?

Multidisciplinary perspectives refers to combining several academic disciplines together for a purpose. For example, bringing an anthropologist into a research team alongside an energy expert and political science scholar to tackle an energy transition problem.

The value of combined expertise is that a cross-section of opportunities and challenges can be integrated into the research, allowing for solutions which take into account community attitudes, political pressures and system needs at the same time.

The term multidisciplinary is sometimes used interchangeably with interdisciplinary or transdisciplinary; they each have a similar effect. Interdisciplinary can be used to describe a more interactive rather than additive combination of disciplines where links between areas of knowledge are harmonised. Transdisciplinary extends this integration to transcending traditional boundaries of each discipline (more holistic).

5.4 Integrate research perspectives in government priority-setting

Australia's research capability is a critical tool for strong, comprehensive bilateral partnerships with Indonesia. Several strategies to integrate research more holistically into partnerships include:

Engage expertise from inception to help frame problems

Stakeholders noted that it is important for Australia to draw on the expertise of researchers when considering the research incentives, agendas and priorities for collaborative engagements. Researchers bring a long-term lens to their research areas and anticipate emerging developments, often in advance of issues or challenges becoming national priorities. In addition to understanding gaps and opportunities through national capacity analysis, research networks could be used to build out expertise capability, with a view to developing and sustaining new partnerships.

A crucial and existing network to tap is researchers already working and collaborating with Indonesians, with on-ground perspectives of strengths, challenges and opportunities. Academic experts have insights, awareness and networks which will enhance and guide program objectives. They can also validate or dispel perceptions about viability, and help anticipate obstacles in program delivery.

Use multidisciplinary perspectives

When seeking research-informed perspectives for government engagement, it is also crucial to recognise the value of multidisciplinarity. Drawing from experts across a range of different subject areas strengthens the advice and reduces risks.

- 'Indonesianists' (i.e. Australia's Indonesia specialists historians, anthropologists, linguists, political scientists, economists and cultural scholars) are society and cultural experts, who bring lived experience along with disciplinary expertise (for example, in education systems, politics, society, health).
- Subject matter experts who bring extensive knowledge of international best practice, for particular disciplines (for example, the world's best energy systems, Al in health, drug developments etc).

Understanding impact-focused research

As Australia considers its own research impact frameworks, consultations brought to light that there is opportunity to bring Australia's collaboration with other national partners, such as Indonesia, into view. There could be very fruitful bilateral engagement on how research impact is understood, assessed and measured to mutually benefit research systems in both countries. Participants noted that combining government agendas with the complex incentives and levers in research systems will be valuable to consider as collaborations mature.

Research integrity

Another research system level topic stakeholders considered worthy of bilateral engagement is research integrity. With the growing concerns in Australia around mechanisms to ensure research integrity, particularly in the context of the 'reproducibility crisis' in science and pressures to publish, bilateral engagement to better understand the extent of problem, consider international best practice, and build solutions could be mutually beneficial for both research systems.⁵⁹

Utilise independent academic peer review methods for grants & research

As the Australia-Indonesia relationship continues to move to more knowledge-exchange and researchbased collaborations, it will be important to draw upon recognised standards and frameworks to generate quality research. Australia uses robust peer review processes for grant funding and research programs, and future knowledge-based partnerships would benefit from integrating standard review processes to ensure quality outcomes.

⁵⁹ Australia's Chief Scientist (31 July 2023). "Trust in Science." https://www.chiefscientist.gov.au/news-and-media/trust-science accessed 14 June 2024.

Conclusion

Australia has long-term interests in understanding Indonesia, building effective and trusting research partnerships with Indonesia, and supporting a dynamic and successful Indonesian research sector.

In the course of this report, it became clear that Australia shouldn't overestimate the readiness of researchers across priority fields to collaborate with Indonesia, and that research collaborations should be managed with a holistic lens in mind. As demonstrated through the data collection, Australia's distinct interests in Indonesia research and capability could be better leveraged by:

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Increasing the quantity and quality of collaboration with Indonesian researchers;

Taking a holistic approach to research partnerships, by acknowledging capacity-building and people-to-people links as important foundations for impact-driven agendas; and Focusing on local and human-centred perspectives;

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Integrating multidisciplinary skills across all levels to maximise opportunities and existing knowledge capability.

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The EAG also provided salient advice that Australia should not be complacent about its current leading position as a collaborator with Indonesia. This status is hard won, but Australia's comparative advantage could easily fade as Indonesia's economic and research system strengths rise in global prominence. The premier position Australia currently enjoys, in some fields, needs to be both celebrated but also nurtured alongside Indonesia's transition to a knowledge-based economy.

It is hoped that this report will help Australia's researchers, and university executives, policy agencies, and research funders, to benefit from others' experience.

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