Case study

Solving shared challenges through partnerships

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Australian Government
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Partnerships for INFRASTRUCTURE
AN AUSTRALIAN GOVERNMENT INITIATIVE

Acknowledgement

This publication has been funded by the Australian Government through the Department of Foreign Affairs and Trade and the Partnerships for Infrastructure (P4I) initiative. P4I partners with Southeast Asia to drive sustainable, inclusive and resilient growth through quality infrastructure. More information about P4I is available at partnershipsforinfrastructure.org.

Partnerships for Infrastructure acknowledges Aboriginal and Torres Strait Islander peoples as the traditional custodians of Country throughout Australia, and we pay our respects to Elders past and present. P4I also recognises early connections between Southeast Asia and the First Nations peoples of Australia.

About this case study

Transportation networks, energy grids and digital communications connect economies and drive economic growth, trade and development across borders. In collaborating on inclusive, low-carbon, disaster- and climate-resilient infrastructure, Australia and Southeast Asia are working towards more prosperous, stable societies.

Such collaboration is not new, but it is emphasised in Australia's Southeast Asia Economic Strategy to 2040,[1] which aims to deepen Australia's economic integration with Southeast Asia and to foster mutual growth and prosperity. This strategy outlines areas of focus to enhance regional cooperation and development: strengthening institutional capacity; promoting sustainable economic growth; enhancing human development; and fostering regional stability and resilience.

As P4I moves into its second phase, this case study explores the successes and learnings from 3 Australia – Southeast Asia partnerships across road engineering, accessible transportation, and energy transition. These partnerships were established between 2021 and 2024 in Cambodia, Laos, Malaysia, the Philippines and Vietnam. P4I's partners in these countries identified the specific infrastructure development challenge, and then Australian organisations with common interests, and the right capability and mandate, were paired with a Southeast Asian counterpart so they could tackle the project together. While some projects had a set outcome and have now ended, others are continuing with new, mutually beneficial work to strengthen future infrastructure decisions.

Cover image: A Philippine delegation visits the Cross River Rail Experience Centre in Brisbane, Queensland, with representatives from P4I and Cross River Rail. Source: P4I

[1] Department of Foreign Affairs and Trade (DFAT), *Invested: Australia's Southeast Asia Economic Strategy to 2040*, DFAT, September 2023.

A Philippine delegation visits Rocklea Station, Queensland, with representatives from P4I, Cross River Rail and Queensland Rail. Credit: Alex F. Bubke and Nadine Narciso. Source: P4I

Strengthening relationships between Australia and Southeast Asia

During its first phase, P4I has built stronger partnerships between Australia and Southeast Asia through collaborative approaches to addressing the region's infrastructure priorities.

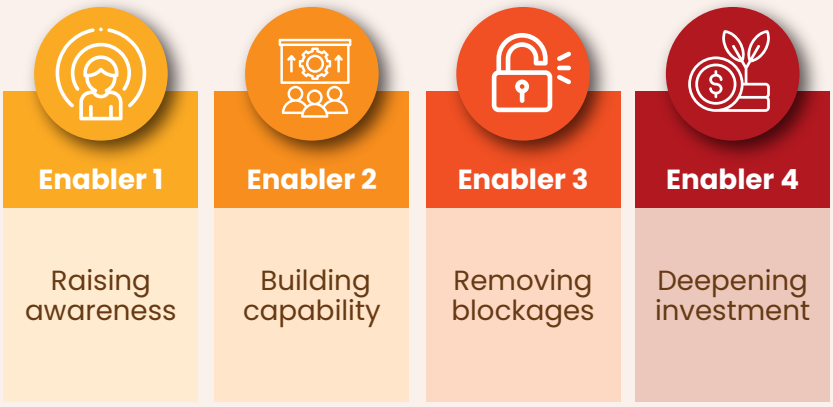
Laying the groundwork for greater investment

Partnerships for Infrastructure (P4I) supports sustainable, quality infrastructure development across Southeast Asia through government-to-government partnerships. In its first phase, from 2020 to 2025, P4I has been enabling Southeast Asian countries to tap into Australia's expertise and experience while building the regional literacy of Australian entities.

P4I is moving into a second phase, which will be informed by the successes of the first. **Simon Cramp, Strategic Director of Partnerships for Infrastructure at the Department of Foreign Affairs and Trade**, explained:

> *"Across Southeast Asia, diverse economies are in different states of development with a range of priorities. Being there in person and getting to know each other is the best way to improve collaboration and P4I is all about building relationships to understand differences and synergies. Under Australia's Southeast Asia Economic Strategy to 2040, we work with 4 pillars in mind: raising awareness; building capability; removing blockages; and then making investments."*

Australia's Southeast Asia Economic Strategy to 2040 – critical enablers



The program's impact has been substantial. To date, 109 Australian organisations have been supported, through P4I, to engage in direct technical and policy exchanges with 64 Southeast Asian counterpart organisations.[2] Capacity is being built through technical advice, training, coaching, mentoring, and co-development of procedures, tools and frameworks. More than 3,000 Southeast Asian participants have taken part in P4I-supported workshops, trainings and study tours. Meanwhile, policy and technical reforms, improved financing and procurement strategies, and project-level support is removing constraints in the development and financing of infrastructure.

Simon sees this foundation work as essential preparation for larger objectives:

> *"The idea is that all this groundwork will enable the mobilisation of greater Australian investment, in coordination with the Australian Government's investment deal teams[3] and Southeast Asia Investment Financing Facility,[4] and with Australia's blended finance platforms and partners. It's been immensely gratifying to see the success of the projects in the first phase of P4I and I'm looking forward to Phase 2 building on this."*

Bringing tailored support to the region

P4I works closely with Southeast Asian government agencies, with support from Australian diplomatic missions in each country, to identify needs or gaps and to find appropriate government bodies to bring together. Starting with the strategies of countries in Southeast Asia, P4I and its partners pinpoint infrastructure issues or challenges and think about Australian organisations with relevant experience or expertise. Because of the diversity of development and priorities across the region, the projects and challenges vary, and a flexible approach is required. In some instances, countries already have infrastructure that may need adapting to become more sustainable. In others, it is possible to leapfrog straight to cutting-edge technologies almost from scratch because a country lacks existing assets.

Over 25 formal partnerships have been established between Australian organisations and Southeast Asian government counterparts. **Katrina Reid, Partnerships Director, P4I**, said:

> *"There is no specific formula on our side, but we do have a process to identify a mutual priority and to understand where there could be benefits in bringing 2 agencies to partner on an area of interest or expertise. We've seen successes in practical outcomes like project approvals and in capacity building, but each partnership needs tailored support because of the heterogeneity of the region."*

She explains that the breadth of the portfolio of projects means it is not hard to find and engage partners. The challenge lies in ensuring objectives are clear and tailored so that the projects bring tangible and sustainable changes that are appropriate in the local infrastructure context. In this way, P4I – in its second phase to 2030 – can build on its strengths and continue to support Australia's Southeast Asia Economic Strategy, strengthening institutional capacity and fostering mutual growth. This includes leveraging the portfolio of partnerships to build momentum on critical development priorities such as inclusion and resilience, and sharing Australia's approach to key infrastructure issues, potentially creating environments that are more familiar to new partners.

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[2] More information about P4I's government-to-government partnerships is available in: P4I, *Government-to-government partnerships* [fact sheet], P4I, April 2025.

[3] More information about the Australian Government's Southeast Asia investment deal teams is available at: Australian Trade and Investment Commission (Austrade), *Investment opportunities in Southeast Asia*, Austrade website, n.d., accessed 19 June 2025.

[4] The Southeast Asia Investment Financing Facility is managed by Export Finance Australia. More information about the facility is available at: Export Finance Australia (EFA), *We're supporting investment in Southeast Asia*, EFA website, n.d., accessed 19 June 2025.

Road design standards in Cambodia

Around the turn of the century, Australia helped to develop Cambodia's existing road design standards, which were based on the Australian documents of that time. Two decades later, these were out of date and no longer used. This presented a perfect opportunity for Austroads and Cambodia's Ministry of Public Works and Transport (MPWT) to collaborate on updating these standards, building local capacity, and opening pathways for more diverse sources of investment in Cambodia's road infrastructure.

Road use in Cambodia is different from Australia – for example, over half of road vehicles are motorcycles – so those involved needed to understand these differences and come up with appropriate standards for the context. As others in the region use Cambodia's bridges and road infrastructure, ensuring these structures are built to technically sound and appropriate standards brings economic benefits to Cambodia in addition to reliability and safety benefits to the road users.

But while there are differences, there are also similarities. Like Australia, Cambodia's road network is increasingly vulnerable to changes in the climate, with higher instances of flooding and inundation. Introducing new road standards that strengthen climate and disaster resilience is vital to both countries.

Austroads and MPWT started their collaboration journey in late 2022, when both teams met in Cambodia. Reflecting on this, **Ross Guppy, Transport Infrastructure Program Manager at Austroads**, stated:

> *"When we first went to Cambodia, we could see why they needed updated standards. Major roads would deteriorate quite badly within 7 to 10 years and they should last a lot longer. There was a need for technical support to ensure documentation was updated in a way that was relevant to the context."*

The team worked on 7 design specifications covering geometry and intersections, pavements, drainage (roads and bridges), bridge design, construction, traffic signs and test methods.

Ross added:

> *"Our working relationships have been incredibly rich. I believe that it's the cooperation with MPWT and support that drive this work, as well as a social purpose. We have worked with passionate and tireless individuals who are eager to deliver impact, and it's been hugely rewarding to be involved."*

As part of the technical assistance, Austroads is running training courses with MPWT to ensure the documents are understood. Attendees go on to take on the role of trainers to reach intended audiences and users. During a visit to Phnom Penh in March 2025, discussions turned to future exchange visits, including bringing 4 MPWT engineers from Cambodia on 5-month secondments to the Queensland Department of Transport and Main Roads (TMR), and continued knowledge sharing. This secondment of 4 MPWT employees to TMR commenced in June 2025, enabling MPWT employees to gain firsthand experience of the technical standards and associated regulatory environment.

Austroads and P4I representatives discuss road and bridge specifications with MPWT engineers during a site visit in Phnom Penh.
Source: P4I

Speaking at the ceremony for the handover and adoption of the road and bridge design specifications in March 2025, **His Excellency Peng Ponea, Minister of Public Works and Transport**, stated:

> *"These technical specifications supported by Australia are another chapter of assistance contributing to the development of roads and bridges in Cambodia. These updated specifications, coupled with the training courses, will enable us to construct safer, more resilient, and more sustainable infrastructure that meets the needs of our people."*

Dr Geoff Allan, Chief Executive, Austroads, reflected that:

> *"Working with the diplomatic mission's Cambodian staff bridges contextual and technical knowledge between government-to-government partners, in terms of managing those greater expectations and creating opportunities so that the work we are doing gets brought to attention at the right levels. The active collaboration from Director General His Excellency Heng Rathpiseth, General Department of Techniques, was vital."*

Geoff also said:

> *"Secretary of State His Excellency Yit Bunna was engaged throughout, bringing in people from all levels and encouraging them to speak and share their expertise. The standards developed will improve safety and deliver an impact for Cambodia's roads, and there is increased capacity for explaining and upholding them because the project had senior champions right from the off."*

Team members have also benefited at an individual level. **Eliz Esteban, Transport Infrastructure Senior Program Coordinator, Austroads**, said:

> *"We've been invited to get involved in other activities through our relationships with our partners. I was invited to contribute to a P4I-led women's leadership program and, as a result, I'm mentoring Ms Sina Roeurn, Deputy Chief Officer of the Road Maintenance Department, who's part of the technical specification core working group. It has been extremely rewarding because I get to share my own experience and insights for career advancement in a male-dominated sector."*

Transportation accessibility in the Philippines

While the focus in Cambodia was on technical standards, the Philippines' Department of Transportation (DOTr) partnered with the Queensland Department of Transport and Main Roads (TMR) to enhance accessibility and inclusion in infrastructure projects. The collaboration, which began in August 2023, provides a framework for co-design with the disability sector and has involved weekly meetings and several exchange visits between Manila and Brisbane.

TMR was identified by P4I as a potential partner to DOTr, which was keen to develop its accessibility and inclusion efforts. **Alex Bubke, Manager, Technical Accessibility at TMR**, has been working in TMR's Accessible Transport Network team to embed accessibility and inclusion in transport systems since 2018, focusing on creating an organisational culture where investment in inclusion is a priority, and ensuring that it is sustainable. With P4I facilitating, the conversation was initially a broad one, with TMR's objective being to share knowledge and lessons learned.

During a visit to Manila in April 2024, the Queensland team began to fully understand the context and challenges faced by their Filipino colleagues. This allowed the partners to identify how and where co-design could support their work. The technical skills in the DOTr team were strong and there was an eagerness to improve accessibility. The knowledge exchange initiative quickly turned into a real collaborative partnership, with DOTr choosing a reform pathway that fitted its own context and development objectives. A framework for co-design for transport accessibility, which could be implemented for future transport infrastructure projects, was created to ensure an enduring culture of accessibility and inclusion.

Alex Bubke said:

> *"At the start, we acknowledged that we were at different stages of maturity, and we didn't understand how to bridge that gap. In addition, we have completely different governance structures and revenue streams, and we are a state agency while they operate across a whole, widely distributed country. The difference in population being vast, we knew that what worked for TMR wouldn't be a perfect fit for DOTr, but as we continued to meet and get to understand each other, we figured that the framework for co-design was where we could achieve the best headway and greatest impact."*

He continued:

> *"It's been a great opportunity working closely with the various teams across this project and being exposed to this collaborative development approach, particularly as we've seen tangible outputs. The co-design framework will leave a legacy for DOTr and that has been quite rewarding for me personally. The insights into infrastructure development in different contexts will be helpful for my team and me in the future. For example, working with the DOTr team to develop a co-design framework that can be implemented across the department's various supporting agencies and private sector partners has helped my team reflect on our own approach to collaborating with TMR's delivery partners. These insights will also be valuable as Brisbane and Queensland prepares for the 2032 Olympic and Paralympic Games."*

On the Philippines side, **Lucas Mangulabnan, Senior Transportation Development Officer, Planning and Project Development Office, DOTr**, shared:

> *"There is a special sense of camaraderie and mutual understanding when interacting with peers in public service because they know what it's like. We share a common set of goals, motivations, and the specific challenges of public management that only peers would understand. This isn't necessarily captured when working with consultants and external advisers. There's a sense that the advice and perspectives shared by public peers are more grounded and practical in the context of governance. It's reassuring that what has been done has been proven and tested within existing policy and resource limitations."*

With the project now complete, and once the framework is in use in the Philippines, the teams' plan is to continue to meet and share knowledge and experiences with an eye on opportunities for future projects to develop together.

Representatives from Queensland's Department of Transport and Main Roads (TMR) visit Manila in April 2024 to better understand the Philippines' transport challenges and opportunities. Source: P4I

Supporting the energy transition across the region

While countries around the world grapple with updating and 'greening' legacy energy systems, Southeast Asia's economic growth and manufacturing expansions drive up energy consumption, adding to the challenge. The region is on course to account for a quarter of global energy demand growth in the next decade, according to the International Energy Agency.[5] **Chris Knight, Program Manager, Energy Systems at the Commonwealth Scientific and Industrial Research Organisation (CSIRO)**, said:

> *"Although Australia accounts for a lot more emissions per capita, the world can't reach its net-zero targets without significant effort in Southeast Asia. The progress we've made in the past decade in Australia in the renewable sector means we are in a good position to partner with countries in the region and work with them to ensure their energy expansion is renewable."*

CSIRO is involved with many P4I projects, including several in the renewable energy sector. CSIRO started with just one project in 2022 and over time has used P4I's platform to establish collaborative partnerships across the region with like-minded partners to solve shared challenges in the renewable energy sector.

Vietnam

Vietnam has recognised its vulnerability to climate change and is prioritising its commitments in the international arena. The Future of Electricity – Vietnam (FE-V) program, launched in 2022 as a science-to-policy program,[6] leverages Australia's energy transition experience to support practical, feasible interventions for a decarbonised, reliable and affordable power system.

While the 2 countries have very different electricity systems, Australia's rapid deployment of solar panels, solar farms and battery storage offers valuable lessons. These same technologies could accelerate Vietnam's transition to cleaner energy – but only with the right policy frameworks in place. CSIRO's expertise in power system transformation has been central to this knowledge sharing, paving the way for future technology transfer partnerships between both nations.

[5] International Energy Agency (IEA), *Southeast Asia Energy Outlook 2024*, IEA, October 2024, p 6.

[6] More information about the Future of Electricity – Vietnam initiative is available at: Future of Electricity – Vietnam, *Future of Electricity – Vietnam* [website], n.d., accessed 19 June 2025.

Laos

In Laos, as part of the Laos–Australia Sustainable Energy Partnership (LASEP),[7] P4I has supported the Ministry of Energy and Mines on an ambitious energy transition objective that delivers increased reliability, sustainability and profitability for Laos's energy sector. A crucial component of this work involved assessing the potential value chain for green hydrogen and ammonia in Laos, leveraging the country's surplus hydropower electricity. The Mekong Region Futures Institute (MERFI) led this strategic initiative, with technical expertise provided by CSIRO. Key achievements include:

- co-developing the Lao PDR National Green Hydrogen and Ammonia Roadmap[8]
- establishing a new master's program at the National University of Laos
- conceptualising a centre of excellence that could position Laos at the forefront of sustainable energy innovation in Southeast Asia, foster research and development, and drive the adoption of green hydrogen and ammonia technologies.

CSIRO's role in the development of green hydrogen and ammonia in Laos

Blueprint development

July 2023

Green hydrogen and ammonia value chain assessment
Participatory systems mapping workshops and prioritisation of end uses by MERFI and collaborators

Techno-economic evaluation
Comprehensive techno-economic evaluation of green hydrogen, ammonia and urea end uses by CSIRO
CSIRO

2024

Capacity-building program
Training programs for Ministry of Energy and Mines staff and provincial-level staff, including techno-economic modelling by CSIRO
CSIRO

January 2025

Green hydrogen centre of excellence concept
Centre of excellence concept jointly developed by CSIRO, MERFI, the Research Institute for Energy and Mines and the National University of Laos after a series of workshops and study visits to Australia, including the CSIRO Hydrogen Technology Demonstration Facility (HTDF), Clayton campus, Victoria, the Monash Electrochemistry Group and Jupiter Ionics

March 2025

National Green Hydrogen and Ammonia Roadmap endorsed
H.E. Phoxay Sayasone, Minister of Energy and Mines, endorsed the roadmap, which was informed by CSIRO's techno-economic evaluation of green hydrogen, ammonia and urea
CSIRO

Workforce development

March 2024

Master of Science curriculum finalised
Completion of Master of Science curriculum in electrochemistry, Faculty of Natural Sciences, National University of Laos, and training of lecturers

April 2024

Student cohort confirmed
Confirmation of 6 master's candidates (3 men and 3 women) to undertake the electrochemistry degree program

May 2025

First internship commenced
Ms Soulixay Xayachak, first master's candidate, began 3-month internship at CSIRO HTDF
CSIRO

[7] More information about P4I's LASEP initiative is available in: P4I, *Laos–Australia Sustainable Energy Partnership* [fact sheet], P4I, November 2024.

[8] More information about the Green Hydrogen and Ammonia Roadmap is available in: P4I, *Setting the blueprint for green hydrogen and ammonia in Laos* [case study], P4I, November 2024.

The Master of Science electrochemistry curriculum represents a particularly significant milestone to develop national green hydrogen and ammonia expertise. MERFI and CSIRO jointly delivered train-the-trainer workshops throughout the country, building the capacity of local lecturers and contributing to curriculum evolution in chemistry programs. The updated curriculum now integrates electrochemistry and green hydrogen energy, creating pathways for talented young engineers to develop expertise in the country's emerging hydrogen industry. The program is also facilitating practical learning opportunities, with 2 graduates undertaking 3-month internship placements at the CSIRO Clayton campus in Melbourne from May 2025 onwards. Their internship focuses on the production and utilisation of green hydrogen, as well as the evaluation and design of clean energy systems for small cities in Laos. Other internships will follow.

Dr Sounthisack Phommachanh, Lecturer, National University of Laos, shared:

> *"Our master's program covered the fundamentals well but hadn't caught up with emerging technologies like green hydrogen. Many of our lecturers were retired professors who brought decades of practical experience to the classroom. While that experience is invaluable, it meant our curriculum was rooted in traditional energy topics with limited coverage of new areas like hydrogen and ammonia. Younger faculty members like myself could see the gap clearly – we lacked current materials and firsthand expertise in these cutting-edge fields. Australia is basically on the cutting edge, so the expertise we get from Australian trainers is coming from people who have hands-on experience and a deep understanding of what it takes to integrate hydrogen into an energy system."*

These academic relationships, built as students, potentially also increase the likelihood of graduates choosing to collaborate with Australia in the future in preference to other partners; an advantage in light of the workforce shortages seen as a hurdle to achieving net-zero goals in Australia.

Chris Knight said:

> *"This is part of a longer-term investment so that Laos can build postgraduate electrolysis and electrochemistry expertise and develop their own hydrogen industry. It will not shift the dial immediately but there is promise that in a few years there will be 10 experts in the country and, before you know it, there will be a core group of 40 to 50, which can make a great difference in a small nation with significant hydropower capacity."*

Collaborative workshop with the Commonwealth Scientific and Industrial Research Organisation (CSIRO), bringing together Laos's Ministry of Energy and Mines, the Research Institute for Energy and Mines, the National University of Laos, and the Mekong Region Futures Institute, in Victoria, Australia, in September 2024. Source: P4I

Malaysia

Designing current and future renewable-powered energy systems demands technical cooperation. Australia, with its high renewable energy penetration, serves as a valuable case study for Southeast Asia. In Malaysia, which has also made progress on its renewable energy journey, CSIRO – with strong support from P4I – has been working collaboratively with the Sustainable Energy Development Authority (SEDA) to identify where Australia and Malaysia can progress knowledge on energy storage. In the first phase of collaboration, the partners prepared the *Tropical Battery Report* to outline current knowledge, and they are now considering what research gaps they can work together to fill. **Mahathir Almashor, Senior Engineer and Project Leader at CSIRO**, explained:

> *"There's a significant research gap around battery performance in hot, humid environments like those in northern Australia and Malaysia – one that presents real commercial opportunities for both countries. Our battery team is enthusiastic about addressing this urgent need for technology suited to tropical conditions."*

For Chris Knight, whether the project is about sharing knowledge, building capacity or, in the case of energy storage, identifying a mutual need for specific research, relationships are key:

> *"Our projects are at various stages. It's interesting for me to see that once relationships start to strengthen, the conversations become more meaningful. Partners are turning up and providing genuine feedback and so projects have a better chance of delivering on their objectives. For example, our SEDA counterparts shared invaluable technical and policy information that would have been difficult to obtain elsewhere, significantly enhancing our research methodology and findings."*

Deepening Australia – Southeast Asia collaborations

P4I's achievements, through government-to-government partnerships, stem from a flexible approach that respects each nation's unique developmental stage, co-creating impactful, sustainable, inclusive and resilient infrastructure solutions.

Central to P4I's government-to-government methodology is a profound investment in genuine relationships, fostering understanding and synergy, and identifying challenges that are shared to ensure the collaboration is mutually beneficial. This people-centric approach supports Australia's key regional strategy: raising awareness, building capability, removing blockages and facilitating investment.

Beyond direct project results, P4I has deepened regional literacy among Australian agencies, showcased national expertise, and strengthened institutional ties, aligning with Australia's Southeast Asia Economic Strategy to 2040. The personal and professional rewards experienced by participants highlight P4I's capacity to build bridges beyond official mandates.

As P4I enters its second phase, it builds on robust foundations. The initiative has proven its ability to identify priorities, broker partnerships and deliver tangible outcomes. The core message is clear: investing in relationships, understanding diverse contexts and focusing on shared goals enables Australia and its Southeast Asian partners to build a resilient, inclusive and prosperous future, transforming challenges into opportunities for growth and stability, and thereby deepening regional economic integration.

Partnerships for Infrastructure

Partnerships for Infrastructure (P4I) is one of Australia's flagship infrastructure development initiatives in Southeast Asia. P4I partners with Cambodia, Indonesia, Laos, Malaysia, the Philippines, Thailand, Timor-Leste, Vietnam and the Association of Southeast Asian Nations (ASEAN) to attract quality investment, address infrastructure gaps, and drive inclusive and climate-resilient development.

P4I does this by providing infrastructure advisory services, facilitating technical knowledge exchanges, building partners' technical capacity, and supporting government-to-government and other partnerships between Australian and Southeast Asian organisations.

Delivered through a single team, P4I is led by the Australian Department of Foreign Affairs and Trade in collaboration with Ernst & Young, Adam Smith International, The Asia Foundation and Ninti One.

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