

Partnering for a Net Zero Future



THE UNIVERSITY OF
SYDNEY

*Advancing collaboration across hydrogen,
ammonia and emerging clean energy systems*



50 Years of Australia–Japan Partnership

From Relationships to Real-World Testing


The critical materials story is no longer only about what can be mined, but about how material systems are built, connected and reshaped for a net zero economy.

In the 50th anniversary year of Australia–Japan friendship and collaboration, the Net Zero Institute (NZI) is strengthening one of its most active international corridors. At a time of geopolitical uncertainty, volatile fuel markets and growing pressure to build secure, lower-emissions energy systems, Japan’s energy transition has increasing strategic importance. As a major energy importer with ambitious decarbonisation targets, Japan is investing heavily in liquid fuels and emerging clean energy systems. NZI supports this transition by connecting research, industry and government to turn

collaboration into pilot-ready projects, with Australia offering strong research capability and practical pathways for joint innovation, testing and long-term partnership. This includes engagement with major industry partners such as Mitsubishi Heavy Industries, a member of NZI’s Industry Advisory Board, alongside emerging collaboration with organisations including a next-generation mobility and smart city developer, NEC Corporation – working towards net zero by enhancing societal efficiency through advanced AI – and Horiba, a global leader in measurement and analytics for energy systems.



Why Japan, Why Now



- Japan is seeking cleaner energy imports and credible certification pathways.
- Australia offers renewable resources, applied research capability and pilot-ready innovation.
- Both countries benefit from trusted partnerships, shared values and diversified supply chains.



NZI-AJBCC Collaboration: Turning Policy into Action

The Net Zero Institute works closely with the Australia–Japan Business Co-operation Committee (AJBCC) to translate shared policy priorities into practical action.

This collaboration is structured through three working groups – Energy, Innovation and Critical Minerals – bringing together government, industry and research leaders to identify bottlenecks, align priorities and progress joint initiatives through both Australian and Japanese channels.

NZI connects this policy dialogue with technical expertise, systems analysis and pilot-ready research, ensuring ideas are grounded in real-world feasibility and aligned with industry needs.

Japan engagement highlights

- Smart Energy Week 2025 participation and seminar delivery
- Two non-disclosure agreements and one memorandum of understanding supporting structured collaboration
- Workshop with a leading Japanese industrial partner (confidential)
- Mitsubishi Heavy Industries has been represented on NZI’s Industry Advisory Board since 2022, backing research projects and contributing to NZI’s thought leadership through the Frontiers Conference 2024.
- Joint submission with NEC Corporation under the Australia–Japan Innovation Fund
- Five reciprocal visits supporting technical exchange and project development



Industrial Collaboration: Hydrogen Innovation (Confidential)

Working with a leading Japanese partner to test, validate and scale hydrogen technologies in real-world environments.

NZI is working with a leading Japanese industrial partner to explore next-generation hydrogen systems in real-world testing environments.

Discussions centre on how emerging technologies can be scaled, validated and integrated into complex urban energy systems, using staged testing and controlled deployment to build confidence and accelerate adoption.

A formal agreement is in place, with both parties progressing priority themes and pathways for deeper technical collaboration.

Measurement and Validation: From Testing to Certification

Supporting measurement, emissions tracking and certification with Horiba to enable credible, scalable energy system deployment.

NZI met with Horiba, a global leader in measurement and analytics for emerging energy technologies, at its Biwako Factory outside Kyoto. Discussions focused on hydrogen and ammonia monitoring, emissions measurement and certification frameworks, and the validation of pilot-scale systems.

This work aligns with Horiba’s plans to expand operations in Australia and allows exploration of opportunities to position the University of Sydney as an Australian research partner.

Government Partnerships for Energy Transition Delivery

NZI works with government partners in Australia and Japan to advance energy transition priorities and delivery. This includes work with Japanese ministries and agencies such as the Ministry of Economy, Trade and Industry (METI), the Japan Organization for Metals and Energy Security (JOGMEC) and the Japan Bank for

International Cooperation (JBIC), as well as Australian Government channels through the Department of Foreign Affairs and Trade (DFAT) and the Australia–Japan Business Co-operation Committee (AJBCC). NZI connects government stakeholders with research expertise, industry partners and pilot-ready projects.



NZI Capabilities and Projects

NZI brings together multidisciplinary expertise to support partners across key areas of the energy transition, including:

- Hydrogen and renewable fuels
- Ammonia systems
- Direct air capture and carbon management
- Measurement, validation and certification
- Critical minerals and supply chain governance
- Carbon capture and storage

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