

Capability Statement

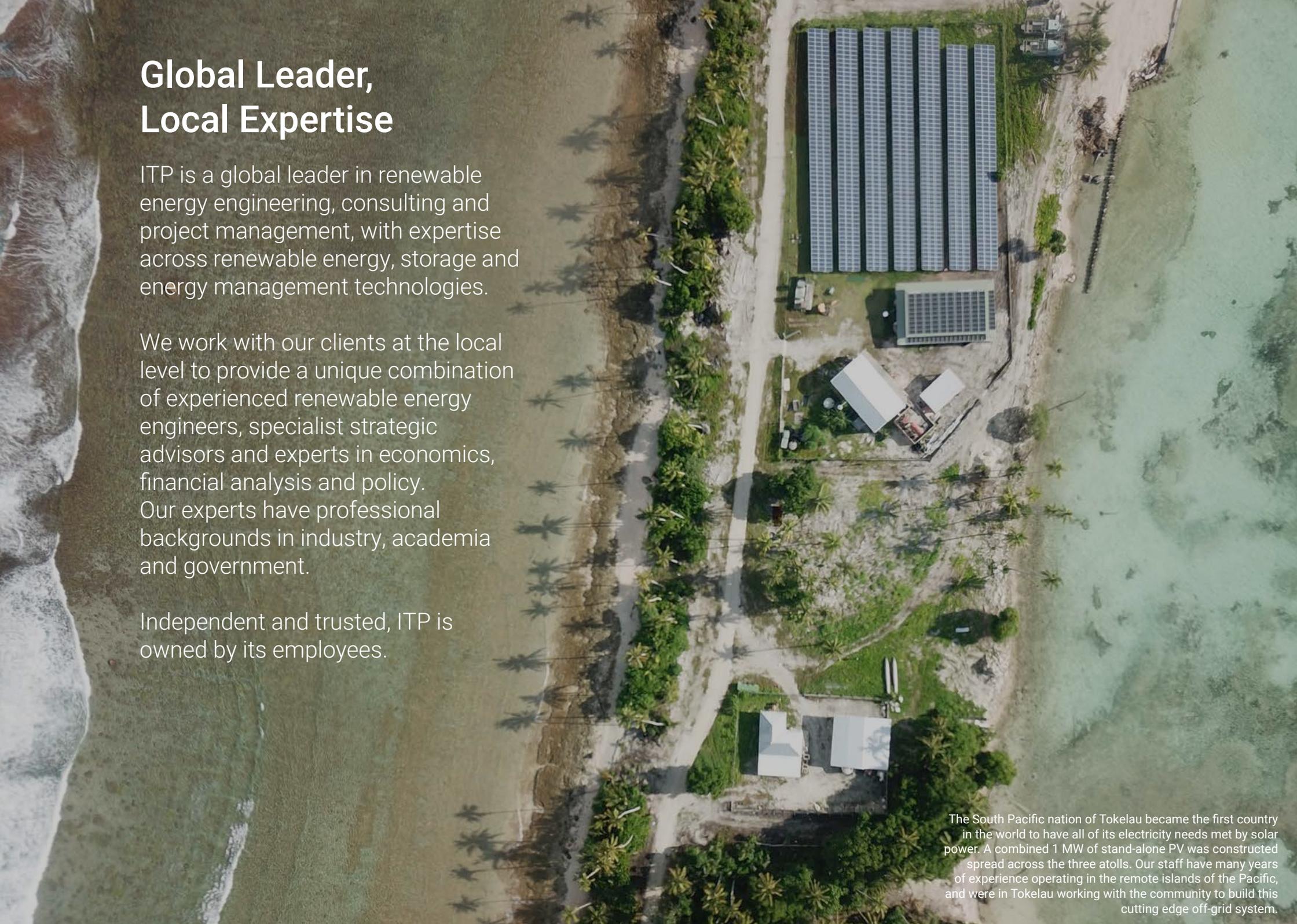
ENGINEERING | STRATEGY | ANALYTICS | COMPLIANCE

Global Leader, Local Expertise

ITP is a global leader in renewable energy engineering, consulting and project management, with expertise across renewable energy, storage and energy management technologies.

We work with our clients at the local level to provide a unique combination of experienced renewable energy engineers, specialist strategic advisors and experts in economics, financial analysis and policy. Our experts have professional backgrounds in industry, academia and government.

Independent and trusted, ITP is owned by its employees.

An aerial photograph of a tropical island, likely Tokelau, showing a large-scale solar farm. The solar panels are arranged in neat, parallel rows on a flat, sandy area. The island is surrounded by clear, shallow turquoise water, and the shoreline is lined with numerous palm trees. A few small buildings and structures are visible near the solar farm, and a small pier extends into the water on the right side of the image.

The South Pacific nation of Tokelau became the first country in the world to have all of its electricity needs met by solar power. A combined 1 MW of stand-alone PV was constructed spread across the three atolls. Our staff have many years of experience operating in the remote islands of the Pacific, and were in Tokelau working with the community to build this cutting edge off-grid system.

Established Track Record

Since opening our Canberra office in 2003 we have expanded into New South Wales, South Australia and New Zealand.

We are proud to be part of the international ITP Energised Group—one of the world’s largest, most respected and experienced specialist engineering consultancies focussed on renewable energy, energy efficiency and climate change. Established in the United Kingdom in 1981, the Group was among the first dedicated renewable energy consultancies. In addition to the UK it maintains a presence in Spain, Portugal, India, China, Argentina and Kenya, as well as our ITP offices in Australia and New Zealand.

Globally, the Group employs experts in all aspects of renewable energy and associated system requirements, including photovoltaics (PV), solar thermal, marine, wind, hydro (micro to medium scale), hybridisation and biofuels. The Group also has two technology-specific divisions: ITP Solar Thermal based in Canberra and the Marine Energy Centre of Excellence based in Bristol in the United Kingdom.

1981	1997	2003	2010	2015	2017
ITP Power founded in the UK	IT Power expands to India	Australian head office opens in Canberra	IT Power passes 4 GW of renewable energy projects delivered	IT Power (Australia) rebrands as ITP Renewables	ITP Renewables opens its Analytics division in Canberra

Projects in Developing Countries

From the outset, the ITP Energised Group has focused on providing specialist advice and engineering services for renewable energy projects in developing countries—supporting international aid agencies and local communities to build reliable and affordable energy supply systems. Over the years, this has expanded to include providing services in developed nations.

The Group offers unparalleled expertise in delivering renewable energy projects, having successfully completed more than 2,000 contracts in over 100 countries worldwide.



ITP Renewables provided the Department of Parliamentary Services (DPS) with advice, costs and performance on options for solar hot water, building integrated PV windows and PV systems on the roof areas of the Parliament House buildings.

Customised, Integrated Services

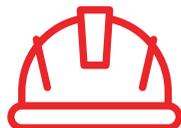
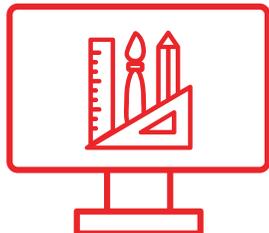
Our range of services cover the entire spectrum of the energy sector value chain, from technology assessment and market forecasting right through to project operations, maintenance and quality assurance.

Engineering

Designing the future

We assist clients at every stage of the renewable energy project lifecycle, from detailed design through to project management, procurement and construction. Our independent engineering services include:

- Owner's engineer role.
- Provision of specialist engineering expertise.
- Contract management and procurement, including tender specification and assessment.
- Materials and specifications quality assurance.
- Technical design and costing for all renewable, storage and smart technologies.
- Feasibility studies, including energy resource and yield assessment.
- Due diligence.
- Installation review and commissioning.
- Inspections and audits across solar PV, solar thermal and energy efficiency upgrades.
- Asset management.
- Training and capacity building.

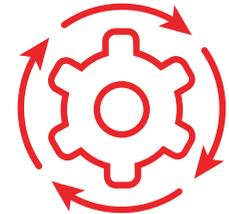
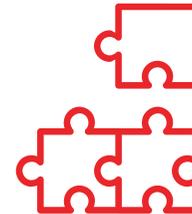


Strategy

Value creation with thought leadership

ITP draws on its extensive international expertise and depth of experience in energy markets and renewable engineering consultancy services to provide truly independent advice on energy markets, policy, and strategy, including:

- Energy sector policy development.
- Government program and project review.
- Business advice and strategies.
- Market development assistance and entrance strategies.
- Funding application assistance.
- Power Purchase Agreements (PPAs) and contract negotiations.
- Training and capacity building.



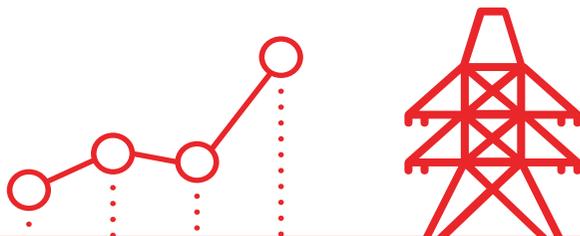
ITP's four key service areas are inextricably linked: strategy, engineering, compliance, and independent energy sector analytics. To ensure the best possible outcomes, we build bespoke teams tailored to meet your project's specific needs. This enables innovative, customer-focused approaches to developing and managing renewable energy projects and assets.

Analytics

Simplifying complexity

Energy sector decision-makers, regulators, operators and investors are grappling with enormous complexity, uncertainty, and rapid change. Our independent modelling and analysis unravels complexity, building a clearer picture of the future of the energy sector. We offer technology-agnostic analysis in these areas:

- Energy market analytics.
- Grid integration and modelling analysis.
- Storage technologies performance analysis & assessment.
- Technology review and status reporting.
- Investment planning for generation and transmission assets.



Compliance

Building a better world

Our compliance expertise includes innovative and market leading battery storage and solar technologies, from our battery testing facility at the Canberra Institute of Technology to large due diligence and audit programs for developments. We have sophisticated delivery processes developed through working in remote areas across Australia and the Pacific Islands.

ITP uses its contractor network to deliver state and national based inspection and audit programs in both solar and energy efficiency with a prominent ongoing engagement delivering the Clean Energy Regulator inspections program.

We offer:

- Operations and Maintenance (O&M)
- Quality assurance (QA)
- Inspections and compliance audits for solar PV, solar hot water and energy efficiency



Innovation and Technologies

Utility Scale Solar PV

ITP, including current team members, have been involved in the solar photovoltaic (PV) industry since the 1980's. Our detailed knowledge of solar PV is recognised worldwide. ITP Head of Energy Policy and PV, Dr Muriel Watt, is highly regarded internationally for her expertise in solar and energy policy.

We offer a comprehensive range of utility-scale solar PV engineering, policy and strategy, financial analysis, and compliance services, throughout Australia and internationally.

Mini-grids and Micro-grids

The ITP Energised Group began as an organisation primarily focused on international development, specialising in home, village and now regional -scale electrification using micro and mini-grids that integrate renewable and diesel generation, typically with battery storage. Since 1981, the Group has applied these technologies in over 100 countries. Similarly, since 2003 ITP Renewables has applied these technologies in virtually every pacific country.

Today, ITP is excited to be at the forefront of applying these technologies, once reserved from remote locations, in the heart of our largest cities.

Solar Thermal

We combine the skills of our specialist experts in several nations through ITP Thermal an integrated part of the ITPE group.

Led by the globally renowned Dr Keith Lovegrove, based here in Canberra, Australia, ITP Thermal offers smart services in sustainable thermal energy with technical specialty including; solar thermal, industrial process heat, hydrogen, ammonia and thermochemistry.



Globally, ITP has been involved in over 4 GW of renewable energy projects in over 100 countries. In particular, ITP has extensive experience in utility-scale solar and wind projects in Australia and the UK.

Small Scale Solar PV

Residential and commercial scale solar PV technology is a low-risk, low-maintenance electricity generation option if correctly specified and implemented. Similar to utility scale PV, ITP offers a wide range of engineering, policy and strategy, financial analysis services.

ITP has undertaken over 8,000 quality and compliance inspections of roof-top PV installations that have had renewable energy certificates created against them. These inspections ensure that installations meet Australian standards, industry guidelines, and State/Territory and local government requirements.

Grid Modelling

ITP Analytics specialises in the development of transparent, open-source capacity expansion modelling tools that provide insights into potential pathways for the evolution of the electricity networks, from the present day to a future low-carbon power system.

These models reveal, for example, when and where existing generation capacity should be retired; and when, where, what type and how much renewable energy and storage capacity should be added, in order to achieve any particular emission or renewable energy target at least cost, while maintaining energy security.

Storage Technologies

ITP specialise in battery performance testing and analysis, as well as designing and implementing photovoltaic (PV)/battery projects and programs.

For 35 years we have been specifying battery energy storage to optimise the design of remote PV diesel hybrid mini-grids all around the world. Recently with rapidly falling battery prices, we have extended this expertise to on-grid applications, typically using lithium-ion battery technologies .



Innovation and Technologies

Wind

At ITP we have proven experience assessing wind resources and using small to medium sized wind generators in remote mini-grid applications. We also routinely provide technical advice on the feasibility of large-scale wind farms, including assessing project proposals for government and utility clients.

Hydropower

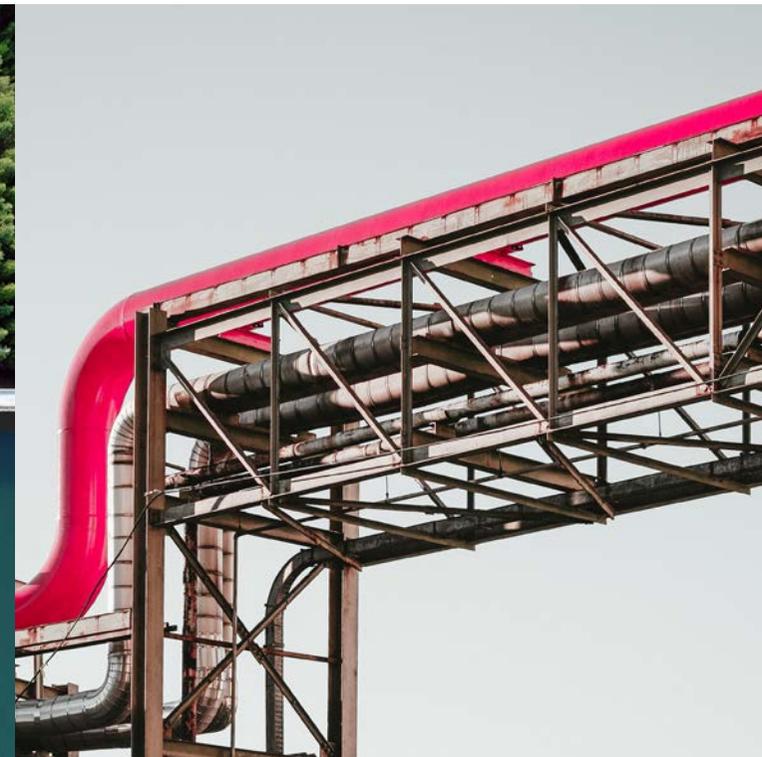
The Group's expertise in small hydropower projects is truly global. We have delivered hundreds of small hydro (mini, micro and pico) projects throughout Latin America, Africa, Asia and Europe.

Clients also rely on our technical and non-technical small hydropower expertise for advice on macro-level policies, site design and installation of small hydropower projects.

Hydrogen

ITP routinely provides expert advice on the rapidly emerging hydrogen industry. We work with a range of renewable hydrogen industry stakeholders and have recently worked closely with the ACT and South Australian governments on their leading policy agendas. This includes reviewing material and concepts put forward by hydrogen proponents; identifying and managing technical risks associated with hydrogen activities including refuelling, fuel cells and injection into gas pipelines; assisting with hydrogen activity decision-making; optimising the demonstration value of hydrogen activities and advising on research and development capability development.

We assist by providing strategic, technical, regulatory and risk advice in this exciting area of development.



ITP specialises in hybrid energy projects incorporating multiple generation sources and storage technologies.

Marine

The ITP Energised Group is at the forefront of marine energy technical design, project support consulting, and market advice, with a Marine Energy Centre of Excellence located in the United Kingdom.

We have been developing and consulting on tidal stream and wave energy technologies since 1991, and have successfully launched several marine energy technologies, developing early concepts through to pre-commercial status.

Energy Efficiency and Demand Management

A core capability is identifying energy efficiency and demand management options that can realistically be implemented.

Improving energy efficiency on both the demand and supply side, as well as managing peak demand, are typically the lowest cost options for our clients, and should usually precede any investment in additional energy generation capacity.

Bioenergy

We have been involved with bioenergy projects for many years, particularly in developing nations but more recently also in Australia and other developed regions. We assess local biogas and biomass resources and examine their potential to displace natural gas and other fossil fuels.





Open Source Grid Integration Modelling Project



Open source modelling tools

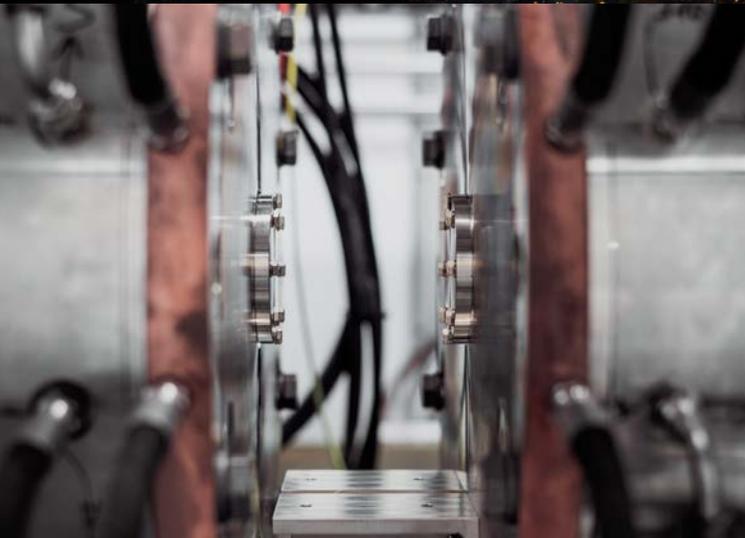


\$880,000 ARENA grant



Technology agnostic modelling

ITP has been granted \$880,000 from the Australian Renewable Energy Agency and the Governments of NSW, Victoria and South Australia to develop openCEM, an open source capacity expansion modelling tool. This is a free to use, technology-agnostic tool that will allow stakeholders to freely undertake extensive scenario modelling that will provide insights into potential pathways for the evolution of the National Electricity Market, from the present day to a future low-carbon power system.



Hydrogen Research and Development Capabilities in South Australia



Capability development opportunities



Industry developments



Research collaboration opportunities

ITP Thermal was commissioned by the South Australian Government in 2018 to identify existing hydrogen research and development (R&D) capabilities within South Australia and the opportunities to extend these capabilities given local, national and international expertise, current and future hydrogen projects and industry developments.



Renewable Energy Frameworks in Fiji



Power Purchase Agreements (PPAs)



Investment forums



New subsidy and incentive schemes

ITP completed a United Nations Development Program funded assignment for the Fiji Department of Energy on the formulation of an Independent Power Producer (IPP) and Investment Framework for Developers of Renewable Energy Power Generation Projects in Fiji. Services provided include review of existing RE policies in Fiji, recommendations on new policies, based on worlds best practice, to drive the uptake of renewable energy in Fiji: the development of standard Power Purchase Agreements (PPA) for IPPs: and the formulation of an Investment Promotion Package, including reviewing and listing bankable investment opportunities.

Mini-grid Hybrid Systems in the Pacific



Feasibility studies



System design



Tender specifications

ITP Renewables was commissioned by the NZ Ministry of Foreign Affairs and Trade to assist with developing priority energy sector projects identified during the Pacific Energy Development Acceleration Program further to tender stage by undertaking feasibility studies, design and tender specifications for hybrid mini-grid systems in the outer islands of the Cook Islands and Tuvalu



ADB Central Asia – 2030 Energy Strategy



Energy opportunities



Market trends



Challenges and risks

ITP was engaged by the Asian Development Bank (ADB) as an energy strategy and policy expert for a 2030 Energy Strategy for member countries in the Central Asia Regional Cooperation (CAREC) Program. The document is an official publication that provides a strategic framework on energy to be implemented from 2020 to 2030 by Azerbaijan, Georgia, Kazakhstan, Kyrgyzstan, Tajikistan, Uzbekistan, Turkmenistan, Pakistan, Afghanistan, China and Mongolia. The publication was prepared for endorsement by the CAREC Ministerial Conference in November 2019. Under this engagement, ITP was an expert contributor to selected chapters.



Lithium-Ion Battery Trial



16 major brands tested

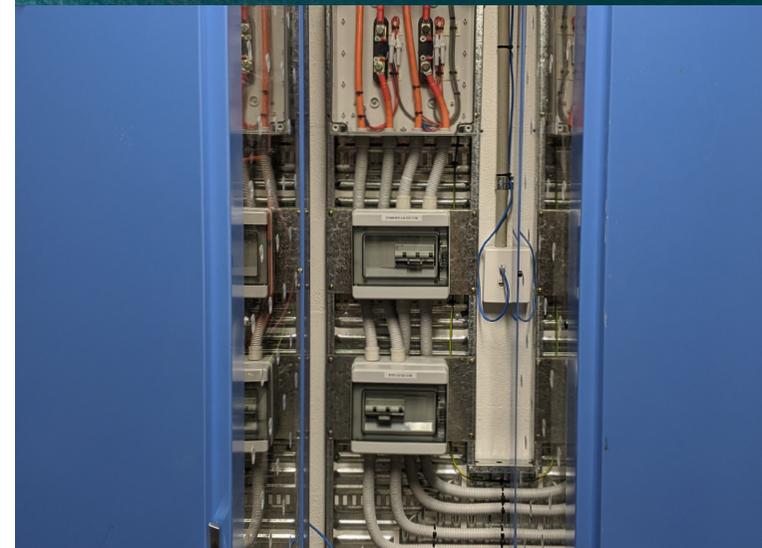


Detailed real world performance testing



ARENA funded

Ongoing and independent testing of the performance of 16 major lithium-ion battery brands, an advanced lead-acid battery and a conventional lead-acid battery in 'real world' conditions, supported by funding from the Australian Renewable Energy Agency





WEL Networks Micro-grid



Distributed rooftop solar



Industrial scale lithium-ion batteries



Specialised technical advisory

ITP was engaged by WEL Networks to support the development of a least cost approach to developing an embedded microgrid at a commercial, residential and light industrial development in Hamilton, New Zealand. ITP provided specialist technical support and strategic advice to WEL Networks on the development and implementation of the microgrid which involves a central solar farm and roof mounted solar, incorporated into all new buildings to provide electricity during the day, while industrial scale lithium-ion batteries store energy for use overnight.



RET Solar Inspections Program



5000 inspections completed



Inspector training and recruitment



Development of custom on-site app

Since 2009 ITP Renewables has conducted over 5,000 solar system inspections as a part of the Clean Energy Regulator’s small-scale installation inspections program. The inspections are of systems that have had small-scale technology certificates (STCs) created against them in the REC Registry as part of the Australian Governments’ Renewable Energy Target.



Energy Master Plan for the Federated States of Micronesia



World Bank funded project



20 year energy master plan



Lead engineering contractor

ITP Renewables was engaged in 2017 as part of a major World Bank project to develop a comprehensive 20-Year Energy Sector Master Plan for the Federated States of Micronesia (FSM). ITP Renewables was the lead engineering contractor to Castalia, providing specialist technical advice to assist with country development.

Kirimati Island Energy Sector Programme

ITP was commissioned for a major electricity infrastructure upgrade on Kiritimati Island (Kiribati), including end-to-end scoping, design and construction management of new PV hybrid diesel power stations and network infrastructure. Kiribati previously relied on diesel generators and rudimentary local LV distribution networks to provide electricity access to the four largest villages on the island.

The initial assessment and feasibility (Stage 1) recommended construction of an electricity network to join the villages together and consolidate the power stations while integrating renewable energy. This recommendation was adopted and fulfilled under an EU supply contract, under a joint collaboration between the New Zealand Ministry for Foreign Affairs & Trade (MFAT) and the EU. The program improved energy access for end users and will significantly lower operating costs for operators. Along with the major contracts, this included supporting activities such as the development of an Asset Management Plan, a review of generation costs and tariffs, a review of institutional arrangements, and training of both local management and technical staff.

During the course of the major contracts, the Government of Kiribati also sought assistance with the refurbishment of the remote Poland power station on the south end of the island. The refurbishment included construction of a new powerhouse, installation of a new hybrid generation system (diesel/solar PV/battery energy storage), and integration of the existing distribution network and solar PV and battery capacity.

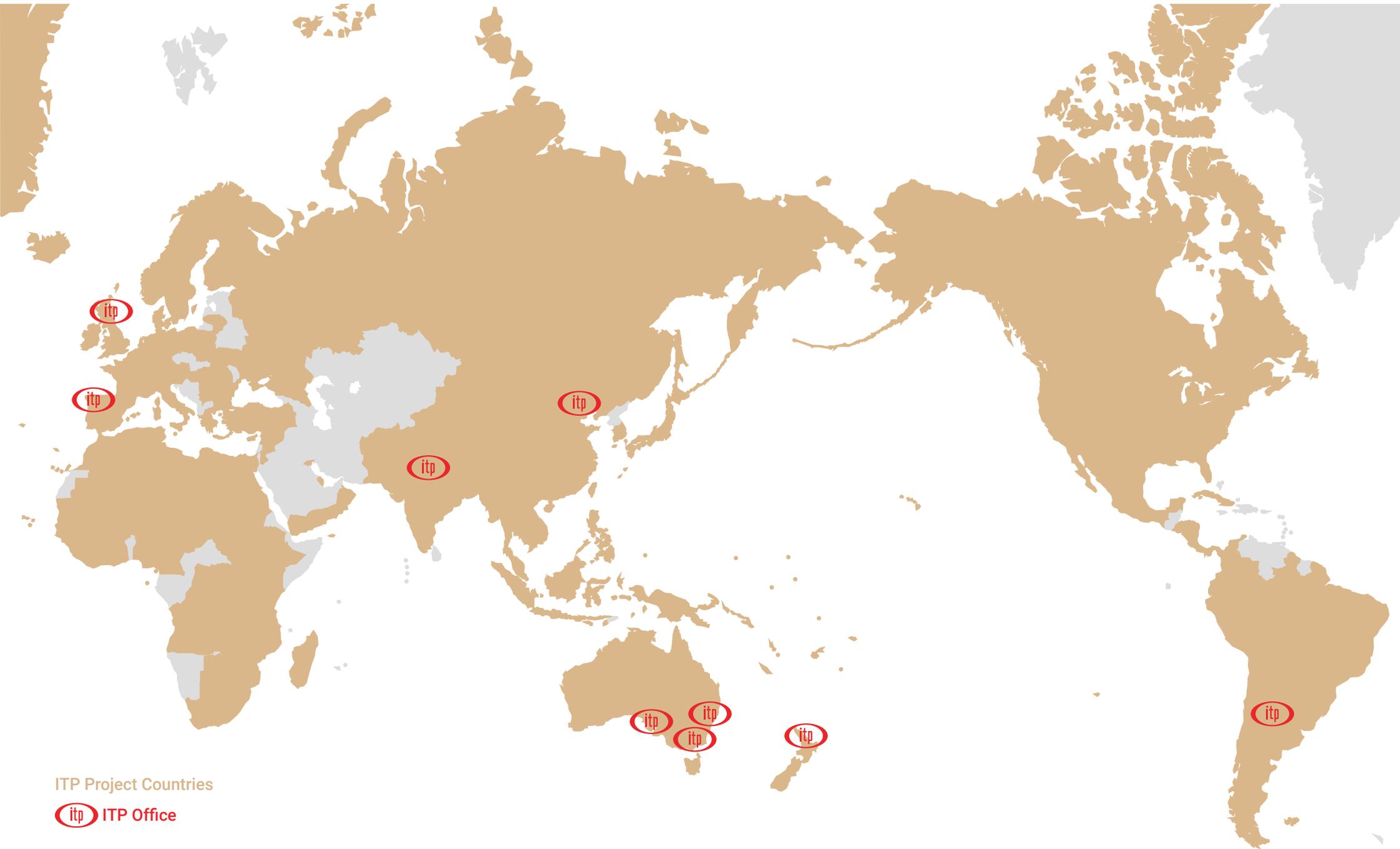


Major Clients

ITP Renewables works on projects of all sizes for government departments and agencies, energy providers, corporations, and aid-funded projects for developing nations.



We are proud to be part of the international ITP Energised Group—one of the world’s largest, most respected and experienced specialist engineering consultancies focussed on renewable energy, energy efficiency and climate change. A particular strength of the ITP Energised Group is our international reach. With ITP Renewables offices located in the Australian Capital Territory, New South Wales, Victoria, South Australia, and Auckland, we build on this international work, focusing on Australia, the Pacific, and Southeast Asia.



ITP Project Countries

 ITP Office



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