



Our name signals our business focus in the Asia Pacific region

Lantau Peak, on Lantau Island in Hong Kong, is also known as Chinese Phoenix Mountain, aptly reflecting the importance of renewal and reinvention to meet new challenges

Introduction to The Lantau Group

About The Lantau Group

Consultants to the Energy Sector

Competition, Markets, Regulation, Policy

Decisions Support Analysis

Disputes

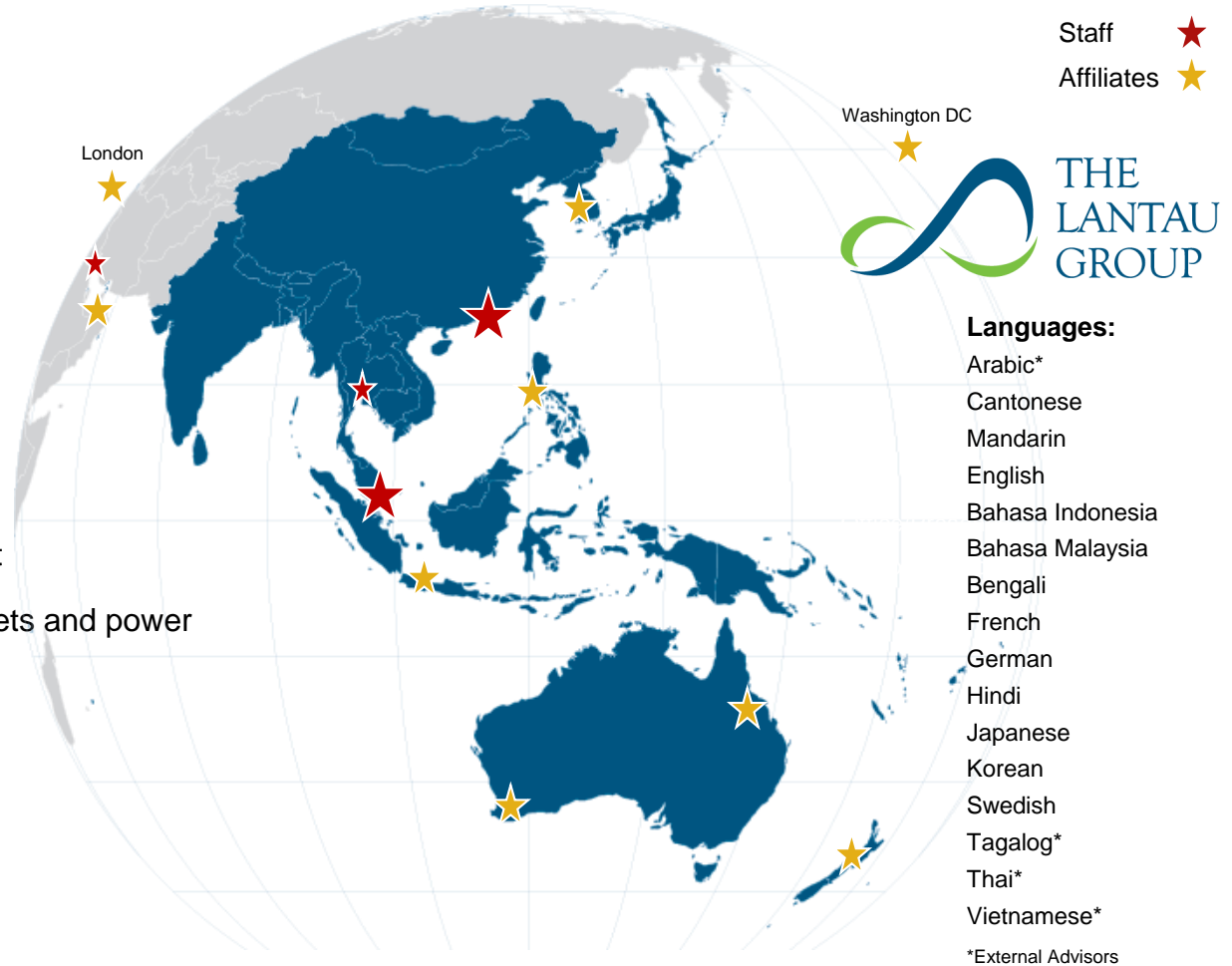
Market Analysis

Asset Valuation

Strategy and Advanced Analytics

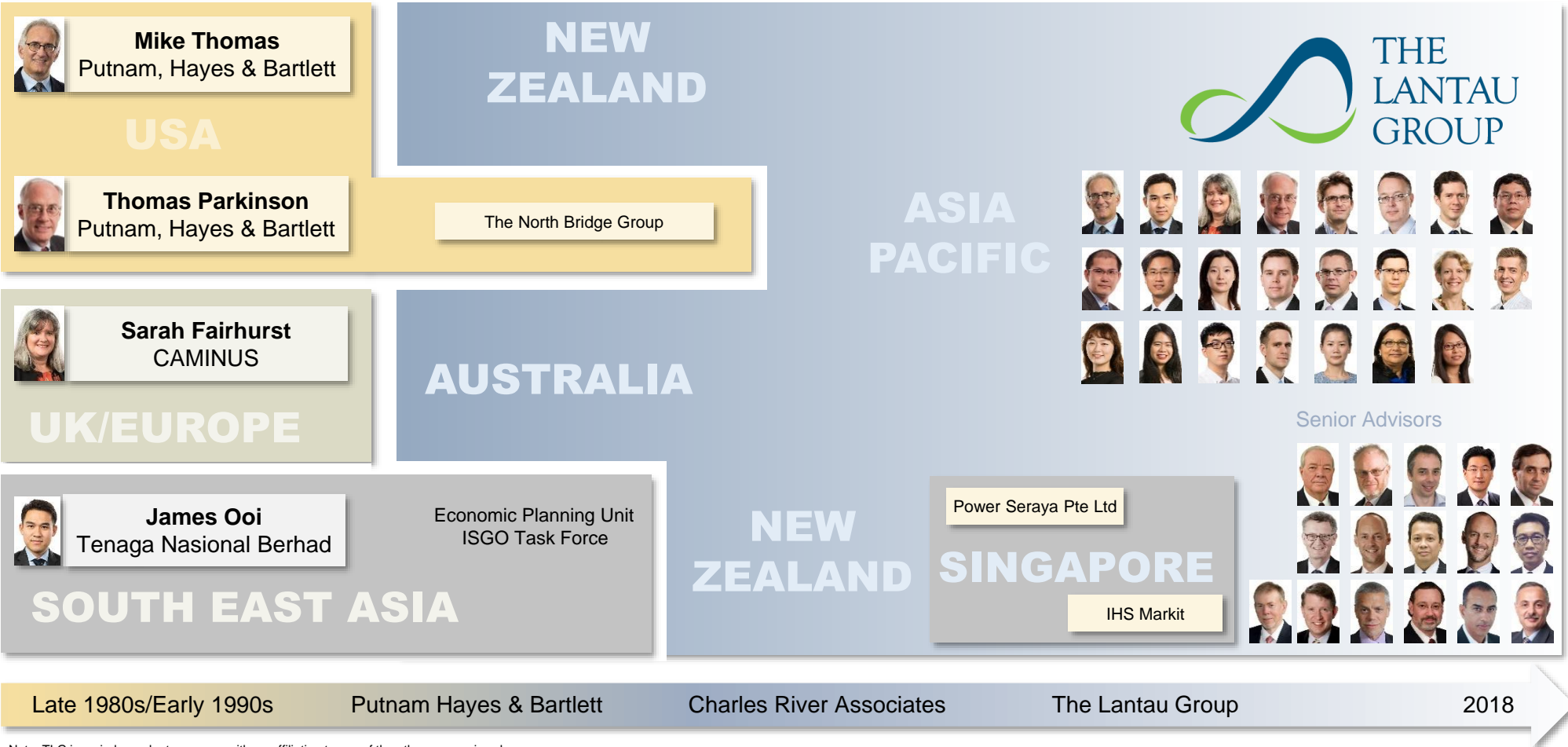
Offerings:

- Strategic, commercial, and regulatory support
- Ability to connect the dots between fuel markets and power
- Analysis-based recommendations
- Highly relevant international experience
- Accessible experts focussed on the region
- Pricing, trends, drivers, risks



All of our work is related to the profound commercial, regulatory, and policy factors shaping the energy sector

Decades of experience in commercial and regulatory matters across the globe



Note: TLG is an independent company with no affiliation to any of the other companies shown.

Deep and Experienced Team

Working with some of the region's leaders on energy matters since 1997

The image displays a collection of logos for various energy-related organizations, categorized into several groups:

- Large Users:** PACE GLOBAL (A Siemens Business), TDR, KPX KOREA POWER EXCHANGE, CLP 中電, Santos (We have the energy.), Marubeni CORPORATION, KPOWER, EGCO GROUP.
- Oil & Gas companies:** semcorp, SITHE GLOBAL, PETROVIETNAM.
- International Aid Agencies:** Saudi Aramco (الرامكو السعودية), meridian, TENAGA NASIONAL BERHAD (2008E-W), PremierOil, EWP, Shell, BG GROUP, WORLD BANK GROUP, ROTHSCHILD, kdb (Korea Development Bank), ING, INTERGEN, UBS.
- Financial Institutions:** Morgan Stanley, COVANTA ENERGY (for a cleaner world), Standard Chartered, imo (Independent Market Operator), PSALM, KHAZANAH NASIONAL.
- Leading Utilities:** ENERGY MARKET AUTHORITY, WÄRTSILÄ, POWER GAS (A member of Singapore Power Group), ERC (Energy Regulatory Commission - Philippines), Economic Regulation Authority, MEDCOENERGI.
- Market and System Operators:** ERC (Energy Regulatory Commission - Philippines), Economic Regulation Authority.
- Government Ministries:** MACQUARIE.
- Regulatory Agencies:** ERC (Energy Regulatory Commission - Philippines), Economic Regulation Authority.
- Independent Power Producers:** HALLIBURTON, JAPAN BANK FOR INTERNATIONAL COOPERATION (JBIC), KEPCO (KOREA ELECTRIC POWER CORPORATION), ophir energy plc, Statoil, HESS, 中国南方电网 (CHINA SOUTHERN POWER GRID).

We combine economics, practical insights, and rigorous analysis

Regulatory and Competition Economics

- Regulation and policy
- Market and industry reforms / restructuring
- Privatization and transfers of control
- Power purchase agreements and tendering
- Single buyer market structure and operations
- Network regulation and cost recovery
- General cost of service and tariff design
- Renewable energy policy, pricing, and support
- Planning and investment approvals
- Cost-benefit assessments
- Cost of capital
- Third party access
- Disputes and arbitrations

**WHERE
MARKETS
MEET
POLICY**

Commercial Value and Decision Support

- Transaction support (market advisory)
- Net operating margin projections
- End-user pricing
- Dispatch modelling
- Value quantification and financial modelling
- Strategic advisory
- Portfolio risk analysis
- Regional market assessments
- Regulatory strategy and risk
- PPAs and end-of-PPA value assessment
- Competition and bidding behaviour
- Fuel-to-power opportunities
- Power infrastructure investment

We support our clients through a deep understanding of Asia Pacific energy markets

We draw from a diverse range of experience and expertise

Vietnam

- Gas and LNG demand supply
- Analysis of coal versus gas competition
- Gas master plan assistance (NOC)

Singapore

- Vesting contracts and market power
- Fuel Mix Policy
- PPA disputes
- Post PPA expiry valuation
- Incentive-based regulation
- Load forecasting enhancement
- Cost of service and tariff design

Indonesia

- Gas to power (small scale)
- Gas to power and non-power (large scale)
- Strategic opportunity review

Philippines

- IPPA Design/Execution
- Ancillary services opportunities and regulation
- LNG entry strategy and economics
- Natural Gas Masterplan
- Distribution Cooperatives
- Numerous renewable, gas, coal, geothermal, and hydro project market DD

India

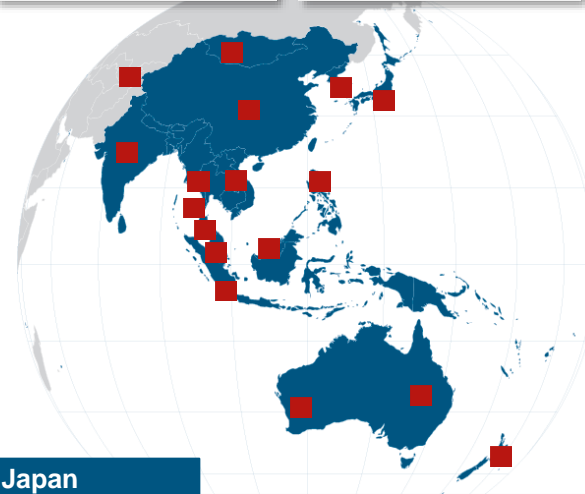
- Wholesale market modelling for IPP developer
- Fuel switching study
- End user pricing / invoice tracking

Mongolia

- Alternative fuel use

Uzbekistan

- CNG Vehicle Market



Japan

- Solar Entry Strategy
- End user pricing of gas and electricity

New Zealand

- Renewable energy opportunities and regulation/policy
- Market analysis / modelling
- Market design and regulation
- Network regulation and cost recovery
- Gas market development

China

- Curtailement study in Gansu, Jilin and West Inner Mongolia
- Transmission system analysis
- Multiple studies on small-hydro power investment opportunity
- Coal-fired power generation and carbon policy in Zhejiang
- Coal-fired power investment opportunity in Chongqing
- Assessment of gas-fired CHP opportunities in Guangdong
- Strategic assessment of opportunities in Guangxi Province

Korea

- Korean "CBP" market review (KEPCO)
- Korean Nuclear Sector Review (KEEI)
- Vesting Contract Design (KEPCO)
- Gas and coal IPP opportunities

Australia

- Capacity market design
- Contract dispute
- Market design and policy
- Energy Market Review
- Demand response economics
- Renewable energy opportunities and regulation/policy
- Market analysis / modelling
- Market design and regulation
- Network regulation and cost recovery
- Gas market development

The TLG team

Mike Thomas

Partner
mthomas@lantaugroup.com



Mike has advised energy sector stakeholders on sensitive regulatory, commercial, and strategic matters for nearly 30 years. He is an expert in the rigorous analysis of energy sector decisions including: how or whether to regulate; how and when to rely on market forces; and the evaluation of opportunities and risks.

Prior to co-founding The Lantau Group he headed the Asia Pacific Energy & Environment practice of a global consulting firm. He has been based in the Asia Pacific region since early 1997.

Mike has an MPP from Harvard Kennedy School and a BA in economics from Carleton College.

Sarah Fairhurst

Partner
sfairhurst@lantaugroup.com



Sarah specialises in the space where commercial transactions and public policy collide – assisting both public and private sector clients to manage transitions. Prior to co-founding The Lantau Group, Sarah worked with CRA in Australia, New Zealand and Hong Kong for over 10 years.

Previously she led influential work streams in the Australian electricity and gas markets, privatising assets and designing and administering bespoke power procurement tenders. She has worked in the power sector within industry (PowerGen) and as a consultant since the start of the UK market liberalisation. She has lived and worked in Asia, Australia/NZ and Europe, and has extensive experience of these markets.

Sarah holds an MA from the University of Cambridge.

James Ooi

Partner
jooi@lantaugroup.com



James Ooi has 20 years of experience in the energy industry. He is an expert in areas related to energy market design, asset valuation, commercial contracting for gas and power (SPA, GSA and PPAs), corporate strategy, planning and operations, with experience across Asia Pacific, the Middle East and North Africa.

Prior to joining TLG, James headed the Gas & Power practice for a global consulting firm in Asia. In addition to consulting, James brings deep operational experience and has held management leadership positions at major generators and power utilities in the region. James is based in Singapore.

James holds an MSc and BEng in Electrical Engineering from the UK and is fluent in English, Mandarin, Cantonese and Bahasa (Malaysia and Indonesia).

The TLG team

Dr Thomas Parkinson

Partner Emeritus
tparkinson@lantaugroup.com



With 30 years of consulting experience in energy, natural resource and other commodity-based industries, Tom helps clients rigorously evaluate high stakes choices, develop better strategies and design effective commercial and regulatory arrangements.

Prior to co-founding The Lantau Group, he worked with Charles River Associates in Asia. With experience spanning projects in 15 countries across four continents, he brings deep insight to his work in markets and utility regulation, as well as in the effective application of quantitative techniques to improve value capture.

Tom holds a PhD from Stanford University.

Stefan Robertsson

Principal
srobertsson@lantaugroup.com



Stefan has over 20 years of experience in business development, M&A, and corporate and project finance across the Asia Pacific region. Prior to joining TLG, he spent nearly 10 years with CLP Group, where he served as head of Corporate Finance and Development for non-Hong Kong activities. He led the CLP Group Investment Committee and Chaired the TruEnergy Risk Committee for CLP's Australian trading and business activities. He also had significant involvement in CLP's investment activities in China, India, and South East Asia, covering the full spectrum of energy assets and opportunities.

Prior to CLP Stefan was with various ABB Financial Services companies in the US, UK, and Asia. He earned his degree in Financial Economics at the Stockholm School of Economics.

Dr Xinmin Hu

Principal
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Xinmin brings a strong background in the Chinese power sector as well as extensive experience in international electricity and carbon markets, having been based in Australia for a number of years most recently as an associate director with Reputex (AU) and before that as an energy sector consultant.

Xinmin is a regular reviewer for several international energy, operations research and optimization journals. He holds a PhD in operations research with a minor in economics from the University of Melbourne and an MSc in Applied Mathematics from Jilin University of Technology, China. Xinmin is fluent in both English and Mandarin.

The TLG team

Mark Clifton

Principal
mclifton@lantaugroup.com



Mark has more than 20 years of experience in the economic regulation of utilities. Prior to joining TLG, Mark worked in the Philippines as an independent consultant where he undertook a three-year assignment for ADB that included case studies of electricity regulation in several countries across ASEAN and Pacific, including Malaysia and the Philippines. He was previously Director of Economic Regulation, Regulation and Supervision Bureau, for the Water and Electricity Sector, Abu Dhabi.

Mark holds an MA in Philosophy, Politics and Economics from Oxford University, UK, and an MA in International and Development Economics from Yale University, USA.

Dr Leo Lester

Principal
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Leo brings a decade of international energy experience, having worked in the UK, India, Thailand and Saudi Arabia. Initially working for an international oil and gas company in upstream business analysis and strategic planning, Leo later led the King Abdullah Petroleum Studies and Research Centre's work in North East Asia.

Leo holds degrees from the Universities of Oxford (MA) and Reading (PhD), and is a Global Research Fellow at the Institute of Asia and Pacific Studies. He has numerous publications and was editor of *Energy Relations and Policymaking in Asia*, published by Palgrave Macmillan in 2016. He is a CFA charter holder and a certified Financial Risk Manager.

Dr Keith Gelling

Quantitative Methods Specialist
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Keith has more than 25 years of experience in electricity and gas industries in the UK, Europe, Asia, Australia and Saudi Arabia. He has developed the commercial framework for numerous independent power projects, ensuring that project PPAs cohere with other project contracts to maximise shareholder value and to support corporate financing or industry privatisation objectives. Keith has a strong background in mathematical modelling and has developed numerous electricity and gas supply/demand models.

Keith has a PhD from the University of Cambridge.

The TLG team

Liutong Zhang

Senior Manager
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Liutong has worked extensively on projects involving detailed analyses of many Asian energy markets for a range of clients including power producers and retailers, financial investors, regulatory bodies, financial stakeholders, and policy makers. In China, he provides detailed province-level analyses of China's energy sector, including advice to clients on renewable curtailment, opportunities for hydro-power, and the economics coal-fired power plants. He has presented in energy briefings and conferences and is called on by Reuters, Platts, Dow Jones and other recognized media.

Liutong holds a Bachelor of Chemical Engineering from the National University of Singapore (NUS). He is fluent in English and Mandarin.

Zhen-Hui Eng

Manager
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Zhen-Hui advises clients on a spectrum of commercial and policy-related issues in Asia, including market opportunity assessment for renewables, commercial due diligence for coal and gas assets, and the economic regulation of electricity transmission and gas infrastructure assets. He also has policy expertise in electricity market design, spanning Single Buyer models to fully liberalised markets. Prior to joining TLG, Zhen-Hui was Director of Policy at Singapore's Energy Market Authority (EMA).

Zhen-Hui holds a 'Diplom-Ingenieur' degree (Master's in Engineering) from the Technische Universitaet Muenchen, Munich. He is fluent in English, Mandarin and German.

Xiao Yue

Manager
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Xiao advises clients on energy tariffs, energy procurement and commodity markets. She manages TLG's tariff benchmarking studies and has a detailed understanding of key cost drivers and regulatory differences among jurisdictions. Xiao monitors energy invoices for commercial and industrial end-users and develops periodic energy budgets and forecasts for facilities across Asia Pacific. She is also an expert in regional mining markets and on the economics of electricity supply to the extraction and processing sectors (such as aluminium and steel making) in China and India.

Xiao holds a B.A.(Hons) in Economics and Management from the University of Oxford and an MSc in Finance and Economics from London School of Economics and Political Science.

The TLG team

Chris Starling

Manager
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Chris has 12 years of international experience working for utility, investment and advisory firms focusing on power and renewables. His expertise includes financial and asset-backed trading within the European power markets, and quantitative analyses of generation economics and power market fundamentals. Chris has also modelled the Philippines WESM extensively using TLG's proprietary tools. Since joining TLG, Chris has worked on commercial due diligence matters for international IPPs and investors, undertaken economic feasibility studies for gas-to-power and solar projects in the Philippines, designed a competitive tender for the World Bank for off-grid solar initiatives in the Philippines, amongst others.

Chris holds an MBA with Distinction and a BSc Natural Sciences (Honours) degree, from the University of Bath.

Paul Buckland

Manager
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Paul manages TLG's QUAFU modelling platform, creating powerful decision-support tools to enhance our capabilities to assist our transaction-focussed clients, in addition to his work with TLG analysing the Philippine electricity market. Prior to joining TLG, Paul worked for Genesis Energy where he managed a team of technical analysts in the provision of operational gross margin forecasts by modelling the New Zealand Electricity Market to allow effective business planning and risk evaluation.

Paul holds a BA and MSc in Mathematics from Otago University, New Zealand.

Michael Matsumura

Manager
mmatsumura@lantaugroup.com



Michael is a manager at The Lantau Group where he works on commercial and transaction advisory projects. Previously Michael was an Energy Sector and Transaction Advisory Specialist with Arup, Hong Kong, where he was primarily involved in LNG terminal and CCGT projects. Prior to that he worked as an Equity Portfolio Sales Trader covering institutional clients at Citigroup in Tokyo, Japan.

Michael holds an MSc in Sustainable Energy Technology from Delft University of Technology, Netherlands, and a BSc in Physics (First Class) from University College London, UK. He is a CFA charter holder and a certified Energy Risk Professional. Michael is fluent in English and Japanese.

The TLG team

Céline Paton

Manager
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Céline Paton is an economic expert in energy infrastructure projects. Prior to joining TLG Céline was a freelance Energy Infrastructure Consultant specialising in on-grid renewable energy auctions, liquid fuel storage terminals and gas-to-power infrastructure initiatives. She has completed many projects with development finance institutions and power utilities, mainly focusing on Africa. She also worked for 5 years in export and project finance at BNP Paribas Fortis.

Céline holds a Master in International Business Economics from Leuven School of Business and Economics, a Master of Business Economics from Louvain School of Management and a Bachelor of Business Science in Management from Facultés Universitaires Saint-Louis, Belgium. She speaks fluent English and French.

Dr Jan Stempien

Consultant
jstempien@lantaugroup.com



Jan Stempien is an expert in new energy technologies and associated policies. Dr Stempien has worked as an energy systems researcher in Singapore, Germany, and Hong Kong. He has published widely in top tier journals on energy storage technology and energy policy design and has also worked on projects related to mobility, buildings, and microgrids. While in Singapore, Dr Stempien was a registered power sector expert for Singapore's National Climate Change Secretariat.

Jan holds a BSc degree in Power Engineering from Warsaw University of Technology and PhD in Electrochemical Energy Systems from Nanyang Technological University.

Soyeon Park

Consultant
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Soyeon Park has a strong interdisciplinary background, combining expertise in engineering with a sound understanding of economics and policy. She has worked on EPC projects, providing project management and risk analysis. In addition she has conducted country-level energy policy analyses for the IEA. Soyeon contributes across the full range of TLG projects, bringing particular strengths in project management and policy research across energy transition and market design work.

Soyeon has a BEng from Yonsei University in Seoul, and a Masters in International Energy from Sciences Po, Paris. Soyeon is fluent in both English and Korean.

The TLG team

Wendy Yong

Consultant
wyong@lantaugroup.com



Wendy Yong has worked extensively in Asia's oil and gas markets. Prior to joining TLG, she held the position as the Subject Matter Expert (SME) on Greater China and East Asian markets for a global energy research firm in Asia based in Singapore. Wendy has strong background in quantitative commercial and regulatory analysis.

Wendy holds an MBA from the University of Cambridge and a BBA (Honours) in Management and Operations & Supply Chain Management from the National University of Singapore. She is fluent in English and Mandarin.

Ian Yao

Analyst
iyao@lantaugroup.com



Ian analyses the key drivers of electricity and gas prices throughout Asia and works closely on China's power and gas markets. He holds a BEng from Nanjing University of Aeronautics and Astronautics, and an MA in Quantitative Analysis for Business from City University of Hong Kong.

Ian is fluent in English and Mandarin.

Zander Bischof

Analyst
zbischof@lantaugroup.com



Zander is an analyst at The Lantau Group where he works on an array of projects, which range from assessing the commercial viability of generation assets in various markets to understanding the regulatory risks that pertain to certain entities under their respective regulatory regimes.

Zander has a BA in economics from the University of Chicago and is fluent in English and has advanced competency in German.

The TLG team

Arcadia Chen

Analyst
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Arcadia analyses the operations and economics of gas and power assets across Asia Pacific. She also contributes to the Lantau Group's work on market studies, combining a sound understanding of both commercial and regulatory-governance issues. Before joining TLG, Arcadia worked in the Oil and Gas sector with Imperial Oil, ExxonMobil Canada.

Arcadia holds a B.Eng in Mechanical Engineering from McGill University and is fluent in English, Mandarin and French.

Archana Roy Choudhury

Corporate Services Manager
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Archie provides and oversees all financial, legal, and office services required to support TLG's project work for its clients. She provides business analysis service and support to project managers on budgeting. She has previously worked in private banking for both Citibank and Bank of China.

Archie holds degrees from the Indian Institute of Technology Kanpur (BTech) and the Indian Institute of Management Lucknow (PDGM). Archie is fluent in English, Hindi and Bengali.

Carrie Ng

Research
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Carrie provides research and translation support related to TLG's electricity market models. She also assists in project support handles logistics and other project delivery requirements.

Carrie is fluent in English and Cantonese.

The TLG team

Nicholas Morris

Senior Advisor
nmorris@lantaugroup.com



Nicholas has over 35 years experience of energy sector consulting and research in Asia, Middle East, Africa, UK, Europe and Australia. He has advised investors, governments and regulators on transactions, system design, strategy and environmental issues. Nicholas has held numerous academic posts, including including a Visiting Professorship at City University in London; Fellow of Melbourne University; and Academic Visitor at Balliol College, Oxford. He has most recently been awarded the post of Adjunct Professor at the China Executive Leadership Academy (CELAP), Pudong.

Nicholas has an MA Engineering, Science and Economics (First Class Honours), an MPhil Economics from Balliol College, University of Oxford and a Diploma in Corporate Finance from London Business School.

Dave Carlson

Senior Advisor
dcarlson@lantaugroup.com



Dave is an experienced energy market operator, designer and change manager with a track record spanning Asia, Africa, Australia and New Zealand. Most recently he was a Senior Business Development Director at SGX, responsible for new initiatives in the gas and power sectors. Prior to that he served for 10 years as the COO and CEO of the Energy Market Company, EMC, the national electricity market operator for Singapore. Dave has served on and chaired many industry and governance panels to further liberalise energy markets including market rules covering such topics as market rules evolution, the implementation of retail contestability, developing gas trading and introducing electricity derivative products.

David Butcher

Senior Advisor
dbutcher@lantaugroup.com



David brings senior policymaking experience to his client work throughout Asia, Central Asia, Africa and the Middle East. In New Zealand, David served as Parliamentary Under-Secretary for Agriculture, Lands and Forests from 1984, entering Cabinet in 1987 as Associate Minister of Finance (until 1988) and Minister of Energy and Industries and Commerce with responsibility for business regulation.

David is now the Manager of David Butcher and Associates, Wellington, New Zealand, a consultancy focused on strategic business planning, restructuring government enterprise, regulation of utility sectors such as electricity and telecommunications as well as a diverse range of other issues related to facilitation, governance, transparency and economic reform.

The TLG team

Peter Bird

Senior Advisor
pbird@lantaugroup.com



Until June 2012 Peter was Executive Vice-Chairman of Rothschild's financial advisory business in Singapore, having moved from London in 2008. He has advised leading corporations on acquisitions and disposals in the energy and infrastructure sector; numerous governments on privatisation in developed and emerging economies; borrowers on project finance, acquisition financing and debt restructuring; and governments on energy industry restructuring in the UK, Europe, Australia, South America and Asia.

Peter has an MA and PhD in economics from the University of Cambridge and has published over 30 articles in economics journals.

Grant Read

Senior Advisor
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Dr Read has been closely involved with the electricity sector for the past 35 years, both as a researcher and a consultant on economic optimisation, reservoir management, pricing, modelling, and market design. More recently, his research has focussed on gas, water, and environmental markets.

Dr Read holds a BSc with 1st Class Honours in mathematics, and a PhD in operations research with graduate papers in economics. He is an Adjunct Professor in Management Science, at Canterbury University.

Pablo Anido

Senior Advisor
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Lito has worked in the power industry in the Philippines for over thirty years. Whilst at PSALM, he was the Project Manager of IPPA Privatisation Program that included the successful tendering of Sual, Pagbilao, San Roque, Bakun and Ilijan. He also has five years' experience in PSALM's electricity trading operations.

Previously he worked for NPC and was a lecturer at the School Of Commerce, St. Scholastica's College.

Lito holds an MBA from Adamson University and a BSc in Mechanical Engineering from the University of Santo Tomas.

The TLG team

Ngakan Putu Miharjana (Dodi)

Senior Advisor
dmiharjana@lantaugroup.com



Dodi has over 20 years experience in infrastructure business, in which he has in-depth knowledge of various issues such as policy, regulatory and commercial aspects of the infrastructure development. Under the National Planning Agency (BAPPENAS), Dodi co-Lead the formulation of Indonesia's infrastructure development for the 2015-2019. It covers the transportation, energy, water, roads and housing sector with total investment of around USD 700 billion.

Dodi holds an MSc in Industrial Strategy & Trade Policy from The University of Manchester (UK), and a Master in Management from PPM Graduate School of Management in Jakarta.

Greg Denton

Senior Advisor
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Greg has nearly 20 years of experience in the electricity and gas industries in a variety of consulting, trading and strategy roles, both in Australia and internationally. Most recently he held a number of executive positions with WorleyParsons. He was involved in the implementation of the market and regulatory structures for electricity and gas in South Australia and Western Australia, established an energy market trading organization, and has led the delivery of infrastructure projects. Greg was formerly the Chairman of the Australian Sustainable Energy Association.

He holds an MBA with distinction from Wake Forest University, and Bachelor of Arts (economics & politics) and Commerce (finance) degrees from the University of Otago (NZ).

Robert S Linden

Senior Advisor
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Bob Linden has devoted his professional career to the study of the intersection of energy markets and policy, from the perspective of a business executive, industry consultant, and independent market analyst. He has advised clients ranging from energy cooperatives to oil majors, and from local citizen groups to multi-national lending institutions, for the past 20 years. His work is based on a profound understanding of gas market strategy across the world. His independent research has focused on technological change, resource economics, market fundamentals, and industry regulation.

Mr Linden holds a BA, summa cum laude, in analytic philosophy from Lawrence University, and a BS, magna cum laude, in chemical engineering from the University of Maryland.

The TLG team

John Earwaker

Senior Advisor
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John is an experienced Singapore-based consultant, whose 20-year career has focused on advising companies and regulators in the utility and transport sectors on a wide range of economic and financial issues.

John is an expert in the regulation and liberalisation of infrastructure industries and has a detailed understanding of the approaches which companies, governments and regulators use to improve efficiency and quality of service to customers.

John holds an MA in Economics from the University of Cambridge, and an MSc in Economics from London School of Economics.

Rajat Sarawat

Senior Advisor
rsarawat@lantaugroup.com



Rajat has extensive senior management experience in industry reform and regulation, particularly in the energy sector. He specialises in progressing and implementing industry reform, developing regulatory and market designs, and industry re-structuring to achieve the reform objectives in energy and water industries. He also has significant experience in implementing and reviewing Access Arrangements, as well as undertaking competition reviews in the energy industry.

Rajat holds a BSc in Science from the University of Delhi, and an MBA from the University of Melbourne.

Professor Wook Kim

Senior Advisor
wkim@lantaugroup.com



Professor Kim has more than 25 years' experience in investment and financial analysis in energy and power industries; electric power economics and electricity market simulation; renewable energy and carbon market; smart grid and microgrid design and investment analysis, and optimization of power system operation and planning.

Currently a professor at Pusan National University, Wook previously worked as manager of the Overseas Business and Power Trading Departments at Korea Southern Power Corporation and as an equity analyst of the utility sector at Samsung Securities, and has been involved in market developments for many years.

Wook holds a PhD from Seoul National University.

The TLG team

Najib Dandachi

Senior Advisor
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Dr Najib Dandachi has three decades of international engineering experience in the electricity and water industry in the UK and in the GCC; he is a recognized technical and business leader in the field of energy, water and infrastructure in the GCC Region where he occupied a number of executive operational and advisory roles. He is a thought leader in the field of utility privatization, asset management and regulation and led a number of change management and transformation programs. For a number of years, Najib was the GCC convener of the EU–GCC Clean Energy Network. He has chaired and served on a number of strategic governmental committees across the GCC Region and has published extensively. Najib holds a PhD in Electrical Power Systems from Imperial College, London.

Peter Littlewood

Senior Advisor
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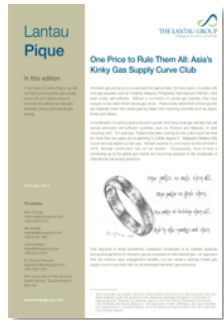
Peter Littlewood is the former Group Director – Operations for the CLP Group in Hong Kong. He was responsible for developing power projects in Hong Kong, China, India, Australia and other Asia Pacific countries over a 40-year career in the power industry that has seen the start of a transition from fossil fuels to renewable technology. He implemented projects using conventional, nuclear, hydro, wind, solar and biomass technologies during the period when CLP became the largest international investor in the Asia Pacific power market and the largest external investor in the China power market.

Peter Littlewood holds an MA Degree in Engineering (First Class Honours) from the University of Cambridge and completed the Harvard Business School Advanced Management Programme.

A leading source of insightful, provocative analysis

Piques

TLG on



Our unique take on a key issue of the day

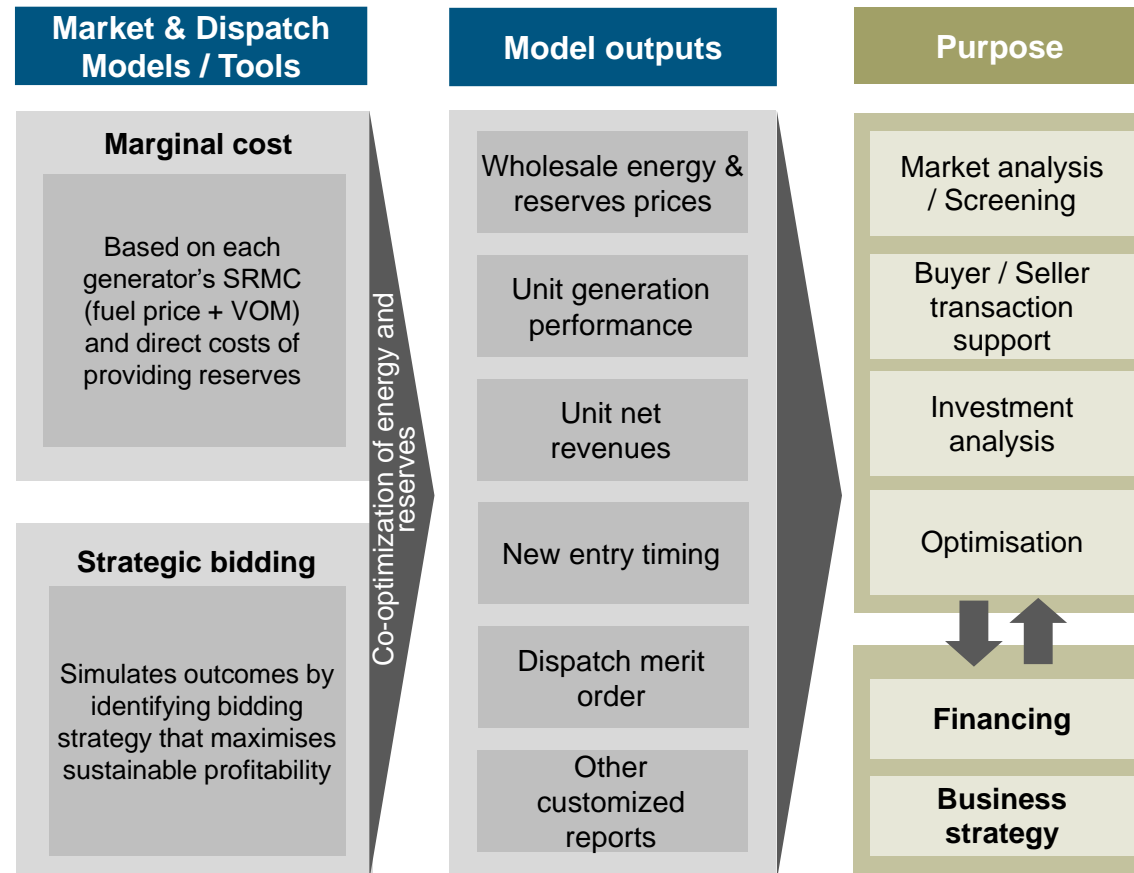
Periodic energy topic

Thought leadership

See www.lantaugroup.com

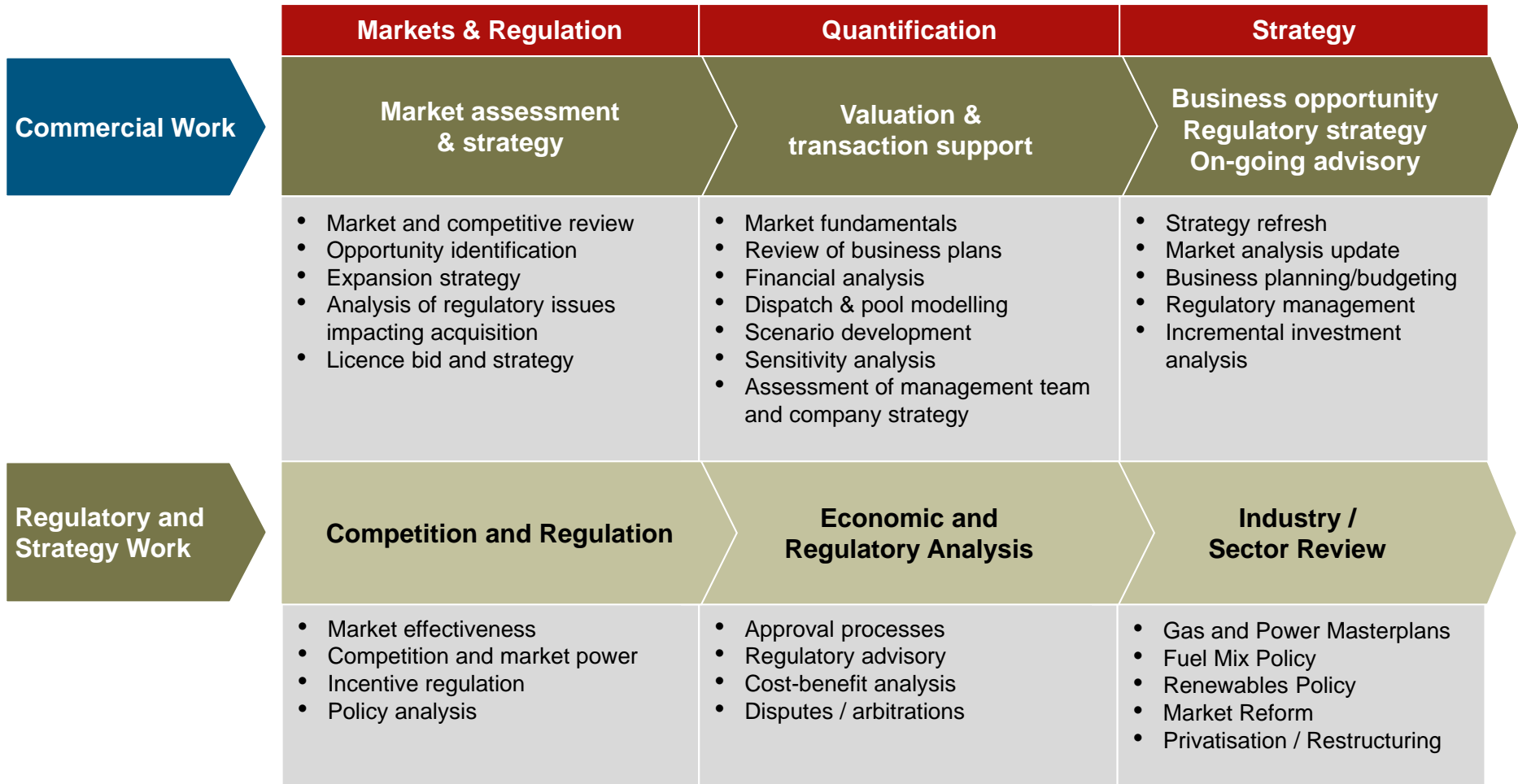
Market analysis is a specialty

- We maintain models of the Asia-Pacific wholesale merchant markets
 - Philippines (WESM and IMEM)
 - Singapore
 - Korea
 - Eastern and Western Australia
- We also maintain models of markets with potential merchant value opportunities
 - Malaysia / Thailand
 - Mekong Region (under development)
 - China (selected regions)
- We have developed bespoke models for special purposes
 - PJM (climate policy scenarios)
 - UK (climate policy scenarios)



We advise clients based on market fundamentals so they can value assets, developing risk management strategies and evaluate contract opportunities

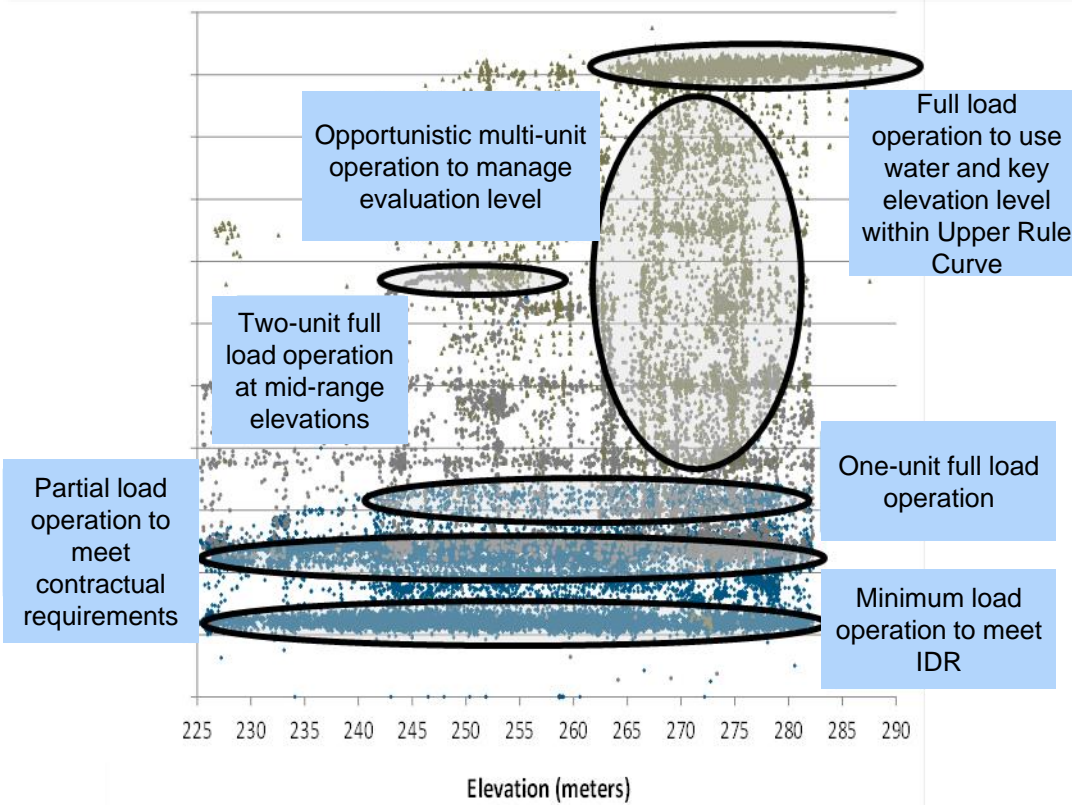
We help clients address a wide range of key challenges



We focus on how our clients can make the best decisions about value

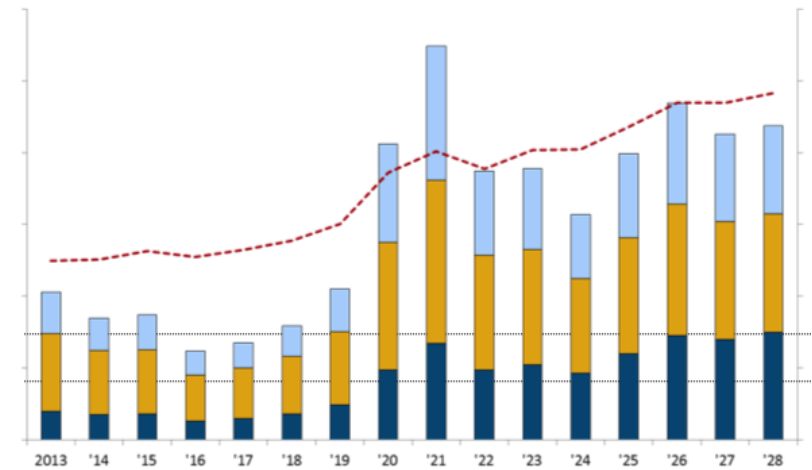
Specialised models and deep analytics to identify, measure, and recover value

Ancillary services opportunity



Revenue projection

Value of AS
PHP billion (real 201)



All good projects start with a question

What is happening to **power costs** in Asia?

How to evaluate **cross-border transactions**?

How to make the **IPPA** successful in the Philippine WESM?

What are the elements of a **prudent regional investment** strategy?

How is **nuclear power** contracted and how is it developed in new markets?

How much is a stake in a **global power** portfolio worth?

Should the capacity of an existing **power station** be increased?

What is the scope for **LNG** in Asia?

What is the addressable market for an **energy storage** solution?

How much to pay for a Singapore **genco**?

How should **transmission** investment decisions be made?

How should “**capacity**” be remunerated in the Korean Cost-Based Pool?

What is optimal **value** of undeveloped offshore gas?

How to manage **stakeholder** expectations during periods of cost uncertainty?

The next few slides highlight some of our experience in more detail

Case studies: Multiple Clients

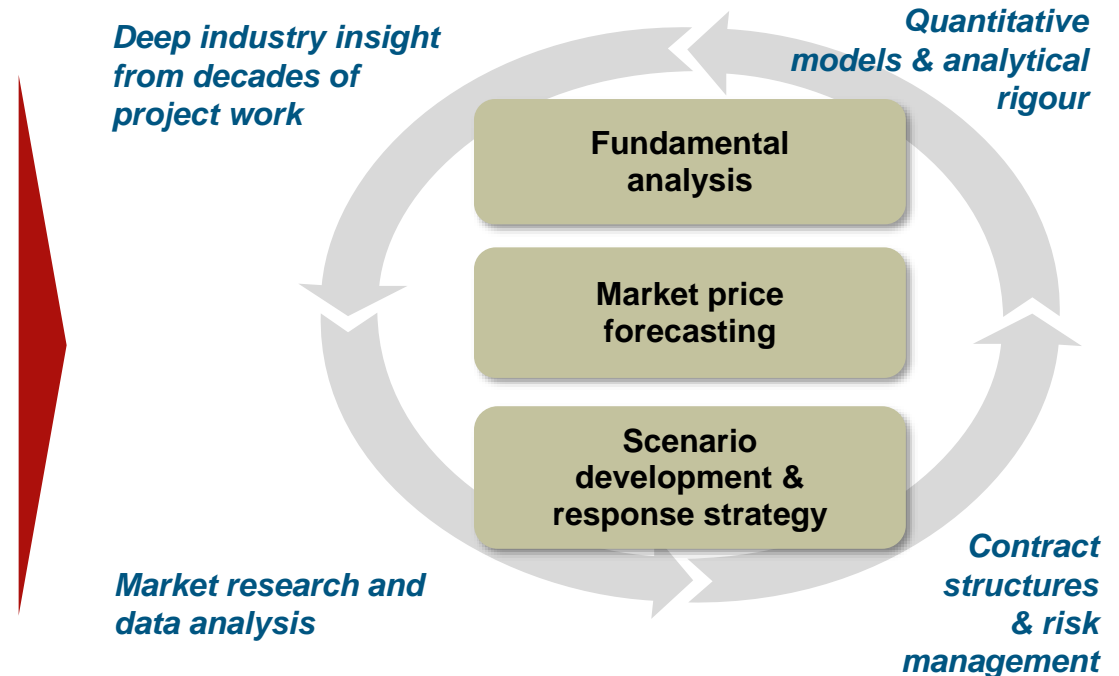
What is happening to power costs in Asia?



Context

- Our clients need to understand how various factors affect power and gas prices
 - Generation asset values
 - Business strategy
 - Business impact
 - Energy contracting / management
 - Public policy / tariff management
- We help our clients evaluate risk and potential response strategies, perform effective due diligence, and prepare for crucial regulatory / policy interactions

Approach and value added



Increasingly, energy costs are a crucial business and policy risk area throughout Asia

Case studies: Multiple Clients

Developing a roadmap for industry restructuring?

Context

- Since 1997, members of the TLG team have assisted governments, regulators and special purpose entities develop or evaluate market-based structures for the power and gas sectors

Singapore
Malaysia
Australia (Eastern and Western)
New Zealand
South Korea
Philippines
Thailand

- We advise on market structures, governance arrangements, market price mechanisms and, importantly, the transition arrangements necessary to make these work

Approach and value added

Experience across many markets

Economic analysis

Review of existing structures / problem

Getting price and quantity signals right

Managing transitions and creating institutional capacity

Vesting contracts, stranded cost mechanism, transition pathways

Effective industry structures

Our experience in these areas is extensive

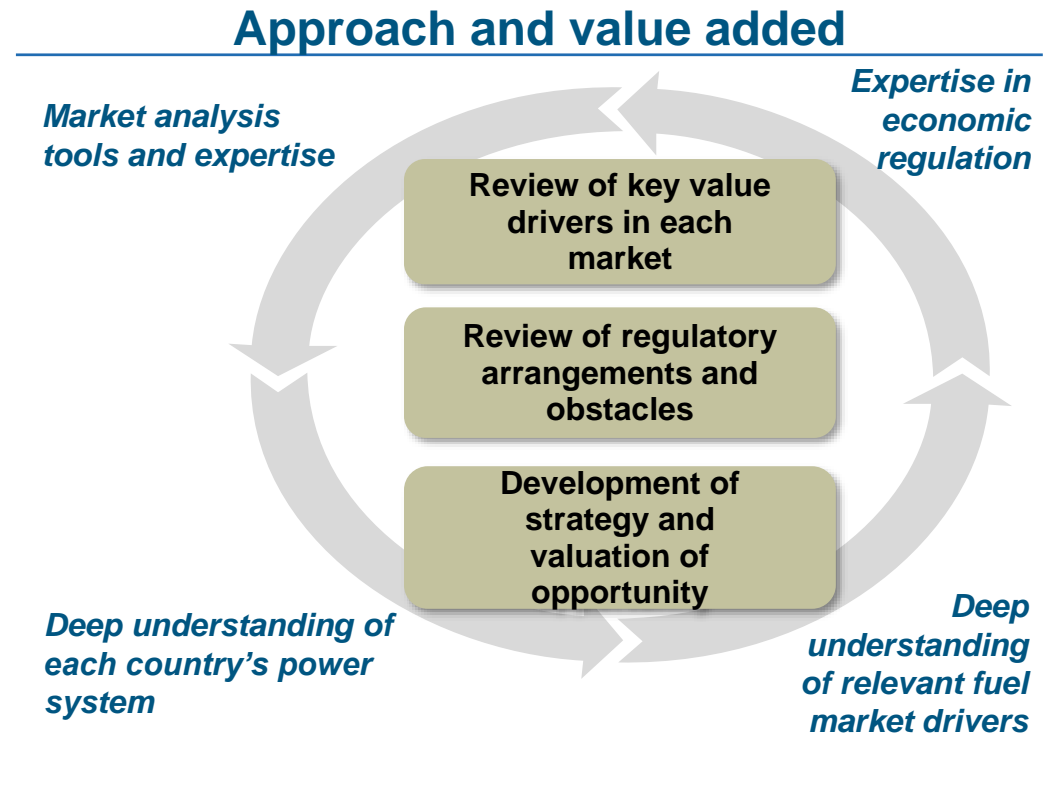
Case studies: Multiple Clients

How to evaluate cross-border transactions?



Context

- One client considered the potential imports of cheaper power from a neighbouring country.
 - Transmission system capability
 - Implications for regulation / access
- Another client was interested in accessing higher cost market opportunities across a jurisdictional border.
 - Impact on profitability and cost
 - Understanding each market



We advise on the risks and opportunities, as well as on the necessary commercial, regulatory and policy changes required to support cross-border power sales

Case studies: PSALM Corporation IPP Administrator formation

How to make the IPPA successful in the Philippine WESM?

Power Sector Assets & Liabilities Management Corporation (PSALM) Privatisation of PPAs

Scope

- Advised on privatisation strategy
- Design & structure the commercial transaction
- Valuation of various generation assets & contracts
- Auction Bid support
 - Supported bidder communications
 - Investor forums
 - Assisted lawyers to draft transaction agreements
 - Advised PSALM board on reserve price for assets

Work

- Advised PSALM on minimisation of stranded costs related to the IPP contracts
- Analysed bidder strategic moves
- Developed commercial structure for the deal
- Developed Luzon and Visayas electricity market model
 - Forecasted spot prices and generation dispatch through asset life
 - Developed financial models of PPAs for privatisation
- Developed bid evaluation support materials

Benefits

- Minimised stranded costs related to IPP contracts
- Supported the sale of assets for over US\$3bn (to date)
- Met PSALM goal to run bids to short timescales



The Philippines has become one of the more active regional market plays for commercial investors
– but it is complex and not without risk

Case studies: Asia Pacific investment strategy development

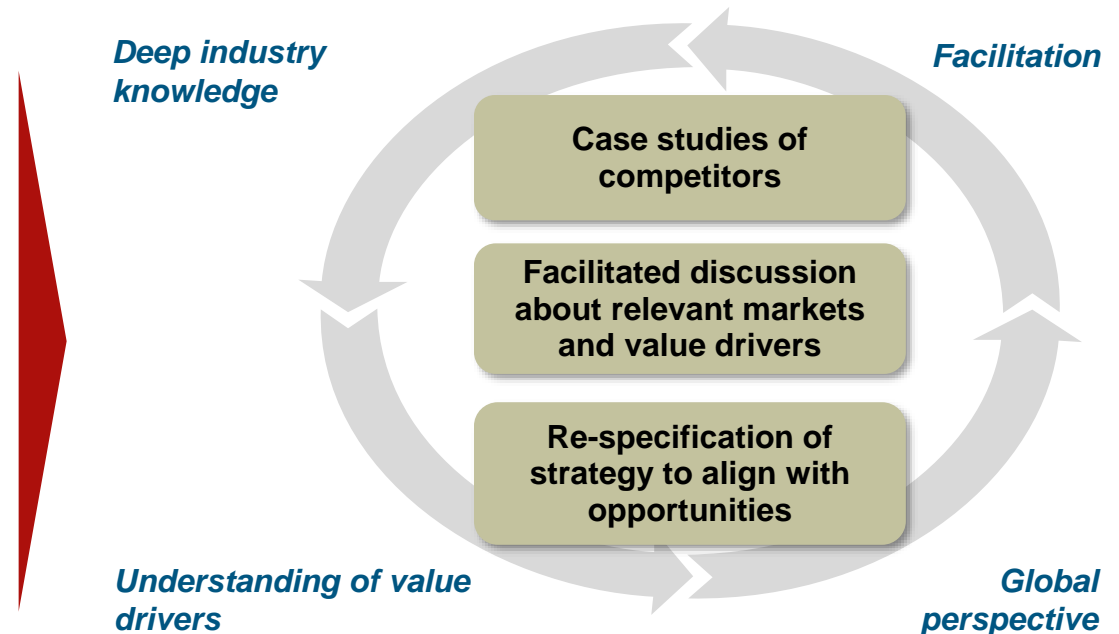
What are the elements of a prudent regional investment strategy?



Context

- Client had adopted a strategy to invest and grow in targeted markets
- However, opportunities over the years did not align with strategy
- Actual outcomes appeared to lack focus – resulting in pressure from the board
- Client sought to review its strategy

Approach and value added



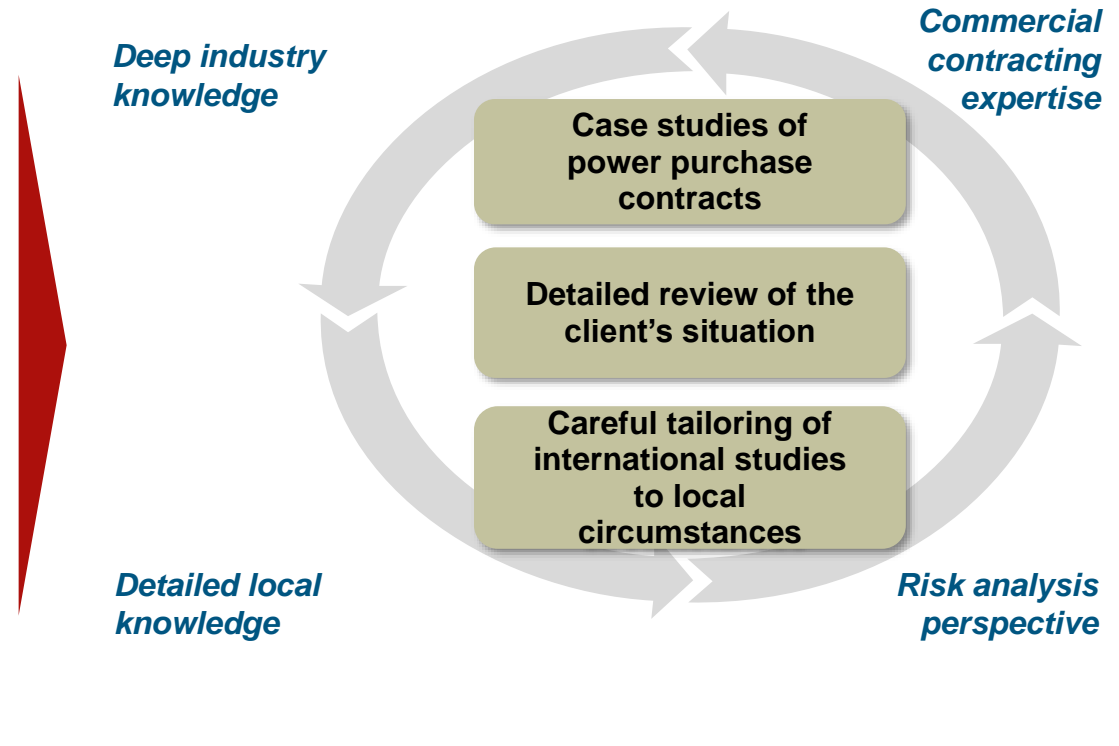
We advised our client in relation to key value drivers and repositioning its expansion strategy



Context

- One client had the opportunity to contract for additional power from existing nuclear reactors and wanted a detailed briefing on the mode of contracting and the use of special clauses in power purchase contracts linked to nuclear power
- Another client wanted to confirm the applicability (and suitably tailor where necessary) the International Atomic Energy Agency's (IAEA) guidelines for jumpstarting nuclear power capability in new markets. The client wanted to be sure that it understood the key staffing, budgeting and resourcing requirements to support the nuclear power initiative

Approach and value added



The Fukushima catastrophe set back consideration of these factors, but a long-term plan remains valuable and important

Case studies: Australia: Murraylink vs NEMMCO dispute

How should transmission investment decisions be made?



Murraylink was a “for profit” transmission line disputing the basis for regulatory approval of parallel network elements

Scope

- Advise on the cost-benefit framework to be adopted when approving the construction of regulated transmission in the Australian NEM
- Conduct an analysis of the costs & benefits using information available to the planning body

Work

- Evaluate materials prepared by the proponent of the regulated transmission line and its consultants
- Interpret the requirements of the Electricity Code from the perspective of an economist
 - Procedural steps
 - Obligations on proponents
 - Methodology and analysis
 - Implications for risk assessment
 - Implications for asset stranding
- Prepare two expert reports and give economic evidence in the dispute before the Electricity Tribunal

Benefits

- This dispute ultimately led to major changes in the way transmission investment was evaluated and approved in the NEM
- Mr Thomas' evidence cited as being crucial to the decision of the Victorian Supreme Court, which was favourable to our client

We apply economics rigorously and carefully to client problems in both the regulated and market domains

How should “capacity” be remunerated in the Korean Cost-Based Pool

Our client was concerned that the “cost-based pool” was not producing the right outcomes

Scope

- Determine the optimal capacity investment mix for the Korean electricity market and compare that to actual
- Review the capacity payment to determine if it was calculated correctly
- Propose changes to make the CBP more effective



Work

- We modelled the Korean CBP and developed an “optimal” investment profile. We compared that to the actual investment profile.
- We recalculated the capacity payment and determined that the currently calculated payments were not correct. We proposed a new form of calculation to correct the error
- We calculated the costs to the Korean consumer of over payments for capacity in the CBP and made recommendations to improve outcomes
- Reviewed international markets for insights to compare to the Korean market
- Made multiple presentations in Korea

Benefits

- Identified problems and proposed solutions to the mix of capacity in the CBP
- We explained why our client was having to pay much more than expected given flawed market rules
- We proposed a package of adjustments to improve the CBP over time.

We proposed a number of long-term changes to the CBP to produce better outcomes for the CBP market overall, and for our Korean client

What is the addressable market for an energy storage solution?

We worked with a global consultancy to provide key insights into the Asia Pacific market with respect to opportunities for an energy storage solution

Market Assessment Objectives

- Assess global market opportunities for technology specific energy storage solution
- Segment and quantify market potential by value-play, region / country and time to deployment
- Inform client positioning and go-to-market strategies

Summary Conclusions

- The addressable market is substantial but diverse
- Energy storage solutions can capture both holistic and niche value depending on country, context and timing
- First mover opportunities are attractive but will require setting precedents and influencing regulatory and market arrangements

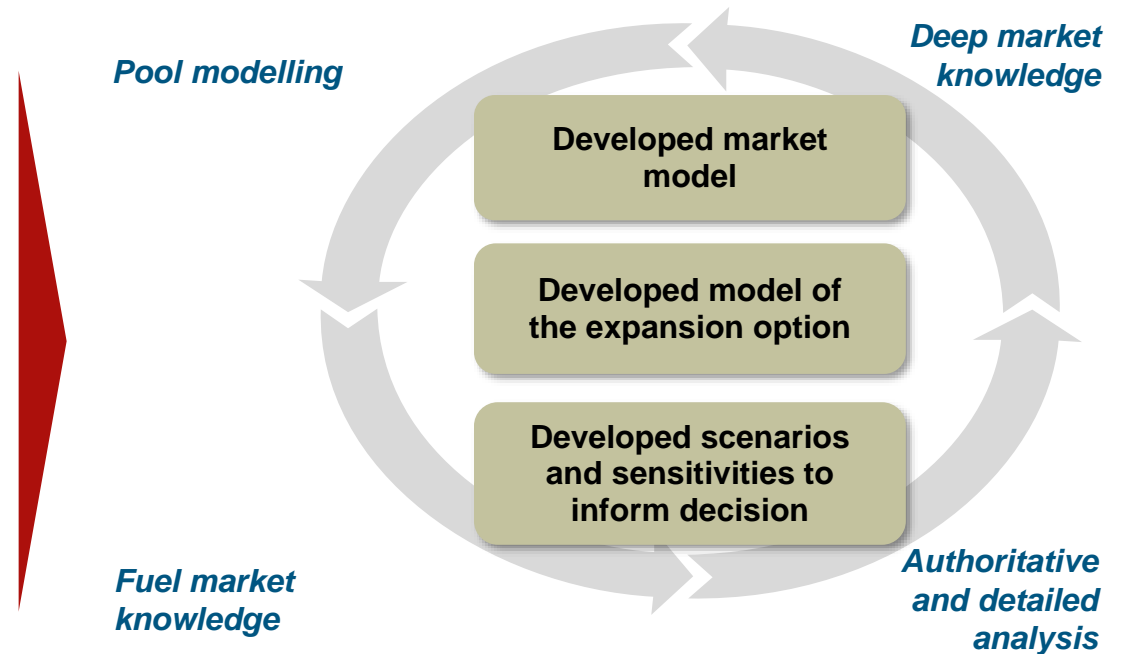
New generation and power-related technology stakeholders are increasingly seeking opportunities to enter the growing Asia Pacific market place

Should the capacity of an existing power station be increased?

Context

- Client had a power station operating under a long-term PPA
- Client had an opportunity to invest in an expansion option
- Client needed to know the economics of the expansion option given that it would operate in a new wholesale electricity market

Approach and value added



We helped the client determine the optimal timing of its expansion option

Case studies: Power asset valuation support

How much to pay for a Singapore genco?

	Scope	Work	Benefits
Tuas Power	<ul style="list-style-type: none"> Assisted 3 separate bidders, seeking to acquire Singapore generation assets The scope of each engagement centred on bid support and asset valuation Highly responsive turn-around to address rapidly changing market conditions as Global Financial Crisis unfolded at the end of the second and through the third sales process 	<ul style="list-style-type: none"> Reviewed Singapore ESI, regulatory framework and market performance history Developed detailed Singapore electricity market model <ul style="list-style-type: none"> Developed fuel price projections based on relationships among relevant fuels Analysed fuel contract structure and implemented relevant constraints in pool model Forecasted spot prices and generation dispatch through each asset life Worked with Financial Advisors to populate financial models for each transaction Worked with Technical Advisors to review and challenge technical and new entry assumptions Assisted clients in understanding the Singapore market and gaining investment committee approval 	<ul style="list-style-type: none"> Create confidence in bid values and understanding of risks and opportunities 
Power Seraya			
Senoko Power			

Singapore faces some tough power market design choices as the power market prepares to concentrate around LNG

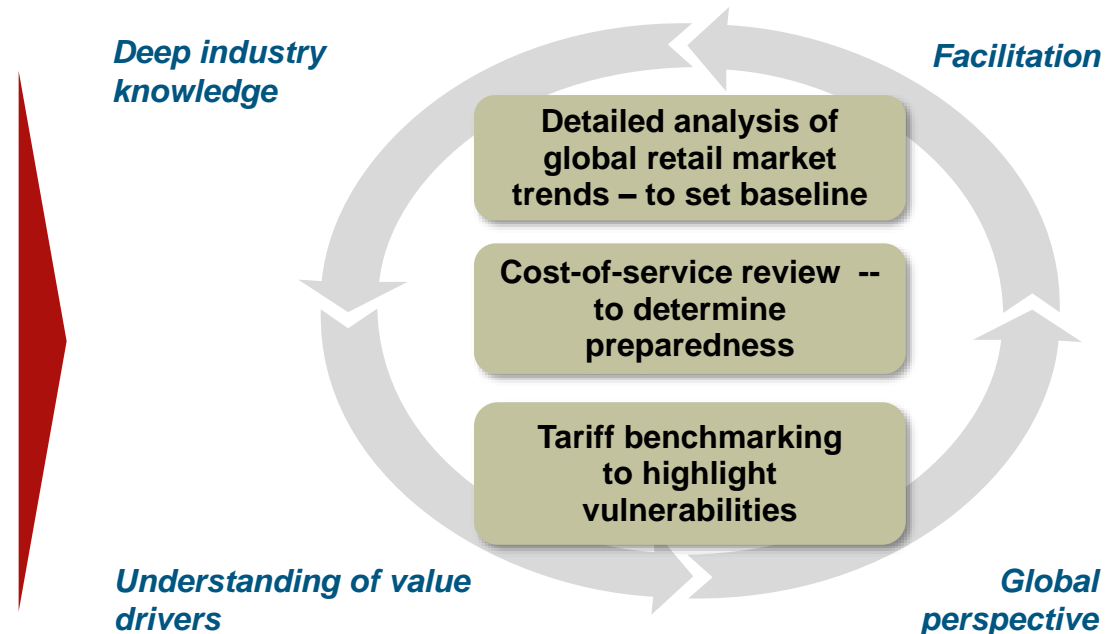
Case studies: Customer-focused trends for electricity market leaders

How to manage stakeholder expectations during periods of cost volatility?

Context

- Client sought to review its strategy across its retail / customer-focused functions
- Uncertain future regulatory and market requirements and known future market development risks required a response
- Client also sought to review performance relative to global peers
 - Tariff benchmarking and detailed market research
 - Strategic positioning

Approach and value added



Developed strategic roadmap for enhancing group capabilities over time

Case studies: Value of LNG

What is the market for LNG in Singapore?

LNG Aggregator

Scope

- Assisted a leading oil & gas management consultancy identify drivers (and quantify the impact of those drivers) on LNG uptake in Singapore's power sector
- Scenarios were used to evaluate LNG timing, pricing and contracting strategies

Work

- Develop scenarios covering different electricity demand profiles over time
- Consider potential for new entry
- Analyse impact of changing oil prices on the relative competitiveness of LNG in Singapore using our Singapore power market model
- Evaluate conversion economics to determine when older steam plants might convert to gas
- Consider how different fuel contracting strategies might create win/win solutions for all stakeholders

Benefits

- Quantification of LNG uptake for use in valuation models and in negotiations and discussions with the government
- Scenario results to inform client of need for forward LNG supplies and possible on-sale contracting strategies

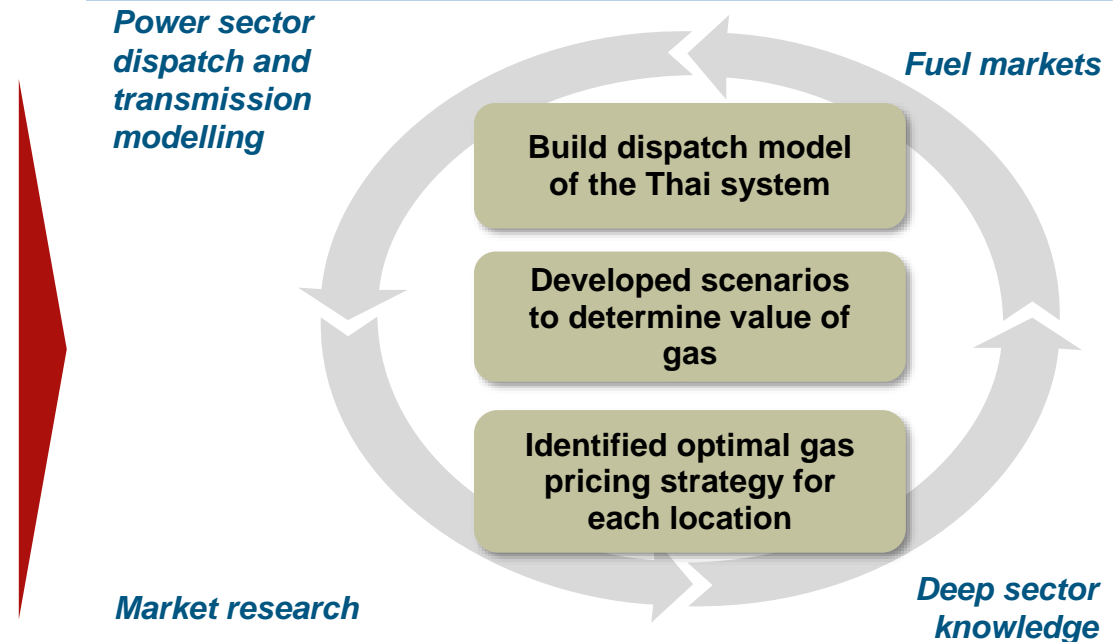
Understanding the power sector is crucial to understanding natural gas and LNG uptake scenarios

What is optimal value of undeveloped offshore gas?

Context

- Client had substantial offshore gas resources
- By optimising the timing of development, the client could capture greater value
- Alternative to gas was coal and energy imports from neighbouring countries
- Client wanted a detailed analyses of the Thai and Malaysian electricity sectors to assess the relative economics of gas versus coal in different regions

Approach and value added



We provided client with the insight and analytical backup necessary to gain approval from its global headquarters for its negotiating and expansion strategy

We also provide expert testimony and analysis to support clients in disputes



- Clients benefit from our commitment to robust analysis and principled economic arguments (examples):
 - **Dr Parkinson** testified in an arbitration involving damages estimation related to the impact of disputed metering equipment in a dispute between Tenaga Nasional Berhad and Segari Energy Ventures. A clear presentation of complex analytics underpinned Dr Parkinson's estimate of damages. The result was favourable for our client.
 - **Mr Thomas** provided key testimony in the Murraylink vs NEMMCO dispute, a matter that paved the way for significant changes to the way regulated transmission investment is evaluated and approved in the Australian National Electricity Market. He also has provided testimony in several other regulatory, commercial, and resource consent matters
 - **Ms Fairhurst** directed a detailed analysis of a complex pay-out function in a settlement between two stakeholders, to ensure the payments were correct. The result was a significant correction in the paid-out amounts.

We excel in competition and commercial matters requiring clear thinking and robust analysis

Other experience in litigation support, expert evidence and arbitrations

- *On behalf of a regulatory body overseeing a competitive market, Dr Parkinson and Mr Thomas provided an expert opinion in a dispute concerning changes in vesting contracts. The dispute centered on the question of whether the changes were necessary in order to prevent abuse of market power. His opinion included an analysis of the effects of the changes on the exercise of market power and associated price effects.*
- *In a vesting contract dispute in Western Australia, Sarah Fairhurst and Dr Parkinson worked as part of a TLG team to estimate the appropriate transfer payment between key parties, per the detailed rules of the vesting contract. Key issues involved the timing of network charges and the associated allocation of these charges.*
- *Dr Parkinson provided expert testimony on behalf of Tenaga Nasional Berhad (TNB) in a case involving a power dispute between TNB and Segari Energy Ventures (SEV). Alleged capacitor failures over a period of several years gradually introduced measurement error in the net energy metering system at an SEV plant selling power to TNB. With support from Dr Keith Gelling, he developed methodology to estimate the net energy sales and associated commercial impact via inference from multiple data sources – including analysis of the capacitor failures and associated effects on net energy measurement, voltage levels over time at different buses, and the gross energy meters installed at the plant. Dr Parkinson supplied both written and oral testimony in the arbitration proceeding, which ultimately concluded favourably for our client.*

Other experience in litigation support, expert evidence and arbitrations

- *Murraylink v National Electricity Market Management Company (NEMMCO)*. Mr Thomas provided economic evidence that was subsequently cited in a favourable decision on behalf of our client. The Murraylink matter concerned a detailed critique of the application of the regulatory test used to determine whether a “regulated” transmission line should benefit from cost-recovery through regulated tariffs even though it would substantially duplicate elements of the Murraylink HVDC “merchant” transmission line.
- *Participant Fees Structure Dispute*, testimony on behalf of the Australian NEM-based National Retailers Forum before the Dispute Resolution Panel convened under cl 8.2.4(a) of the National Electricity Code, 2003. Mr Thomas advised on how fees should be structured so as to recover the appropriate costs from market participants.
- *In the matter of Applications by Meridian Energy Limited to take, use, and discharge water for the North Bank Tunnel Scheme CRC071903, CRC071139, CRC071096 and CRC071878*. Mr Thomas advised on the economics of hydro-based power generation in the context of the water resources required by the Scheme.
- *In the matter of Electricity Distribution Businesses and Gas Pipeline Businesses - Asset Valuation before the New Zealand Commerce Commission, Evidence Statement of Michael T Thomas*, available at <http://www.comcom.govt.nz/assets/Pan-Industry/Input-Methodologies/AssetValuationSub/Unison-Attachment-Submission-on-EDBs-and-GPBs-Input-Methodologies-Asset-Valuation-Thomas-Statement-19-August-2010.pdf> Mr Thomas advised on asset valuation methodologies for a regulatory matter.

Other experience working with law firms on market or commercial matters

- *Design of IPPA arrangements for the Republic of the Philippines to support the highly successful privatisation of dispatch rights to coal, geothermal, gas, and hydro IPPs. Work was led by Mr Thomas and Ms Fairhurst over a period of three years working closely with the Philippine Power Sector Assets and Liabilities Management Corporation (PSALM) and a legal team lead by John Yeap of Pinsent Masons.*
- *Design of risk management arrangements (pool price stabilisation and risk management strategy) for the Korean cost-based pool (CBP). Work undertaken through the “Freehills Consortium”. Mr Thomas and Ms Fairhurst developed the proposed vesting contracts and directed the modelling of the Korean power market, working with lawyers from Freehills who drafted the formal legal vesting contracts and with KEPCO staff in Korea.*

Other experience in litigation support, expert evidence and arbitrations

- *MDL 587 (Lower Lake Erie Antitrust) – a multi billion dollar competition matter concerning iron ore shipments over the US Great Lakes from ore operations to steelworks – undertook analysis of various issues, including analysis of the economics of over thirty years of iron ore shipments by various types of ships through combinations of docks and railroads to multiple US steel mill. Dr Parkinson and Mr Thomas led various workstreams, overseeing associated analyses, and drafting testimony for experts providing testimony in the matter.*
- *Cleveland Stevedore – a multi hundred million dollar competition matter that spun off from MDL 587 – Mr Thomas project managed the core analyses of the case, drafted testimony on damages and advised counsel throughout the extended trial period (about two months).*
- *Kodak v Polaroid – the damages estimation portion of a multi billion dollar patent dispute – Mr Thomas undertook economic analysis of the rate of film burn based and of the impact of advertising on sales of different infringing cameras, also on the economics of market expansion through increased consumer awareness of instant photograph in general.*
- *Texas Utilities and Chaco Energy Company versus Sante Fe Industries et al – Mr Thomas analysed the market for power plant coal supplies in the United States and the impact that failure to build a rail spur to a coal mine had on access to competitively priced coal by the utility.*

Other experience in litigation support, expert evidence and arbitrations

- *In several cases involving Oklahoma Gas & Electric and an IPP developer, Dr Parkinson analysed the net benefits for the state of Oklahoma associated with proposed cogeneration projects and provided associated expert testimony.*
- *For Idaho Power (IPC), Dr Parkinson provided expert testimony concerning the potential competitive impacts of IPC's obligation under PURPA to buy IPP power under long-term contracts at fixed prices.*
- *Also for Idaho Power, Dr Parkinson structured an innovative deal combining a project buyout and a competitive solicitation to replace the foregone project capacity. Coupling the two provided a market-based metric for the savings from the buyout and enabled IPC to demonstrate clearly that the buyout was in the public interest.*
- *For a tax case involving Avatar Holdings, Dr Parkinson valued the distribution assets at a development in Arizona named Rio Rico. These assets were unusual in that – as a result of a prior bankruptcy proceeding – the assets were required to be installed in their entirety despite the fact that the development had virtually no homeowners. He established that the assets had zero market value.*
- *In the Public Service of New Hampshire (PSNH) bankruptcy, Dr Parkinson worked on behalf of the third mortgage bondholders. Using bond yields, he was able to infer the implied market value of the completed but not yet licensed Seabrook nuclear station. This valuation helped to support a brokered deal between the bankruptcy court and the New Hampshire regulator.*

Other experience in litigation support, expert evidence and arbitrations

- *Various Parties v Snap-on Tools* – a series of matters alleging that Snap-On damaged its franchise operators. Mr Thomas project managed a number of individual cases, assisting in the preparation of detailed analyses of the financial performance of franchisees for use by the testifying expert.
- *TNT Holland* – application for a new LTL service in Michigan – Mr Thomas drafted testimony explaining how the proposed new LTL service met the standards required for regulatory approval of the new service.
- *Confidential client in a Section 5B (SEC) matter (securities fraud)*. Mr Thomas analysed the client's business plans and announcements in relation to software that was delayed on multiple occasions to determine whether the projected revenue streams were credible or fraudulent.
- *Confidential New England Bank Failure*. Mr Thomas analysed economic projections available at the time immediately prior to the failure to determine whether the downturn that allegedly caused the bankruptcy should have been anticipated as a material evolving business risk given what was happening to various leading indicators.
- *For a defendant in a major environmental damage matter*, Mr Thomas conducted econometric analyses to identify weaknesses of a hedonic regression model that purported to quantify the impact of knowledge of incremental pollution on housing values. In addition, he drafted testimony and worked closely with counsel to provide assistance on a range of analytic issues.

We combine deep energy sector expertise, analytical rigour and strategic insight

The Lantau Group

Analytical Rigour

We focus on what can be measured and substantiated. Qualitative assessments are typically reality checked using a variety of techniques. We provide independent, objective, well-grounded advice for decision-makers facing high stakes choices.

Core Industry Expertise

We are dedicated to energy issues and electricity / gas markets in the Asia Pacific region.

This is what we do.

Deep Experience

We gained our experience first-hand, working on seminal projects and on key assignments throughout the Asia and the rest of the world. We understand how regional energy and electricity markets have evolved over time because we have influenced that evolution through our work. We complement our commercial and strategy work with extensive experience advising regulatory agencies and policy makers.

Multi-Disciplinary/ Perspective

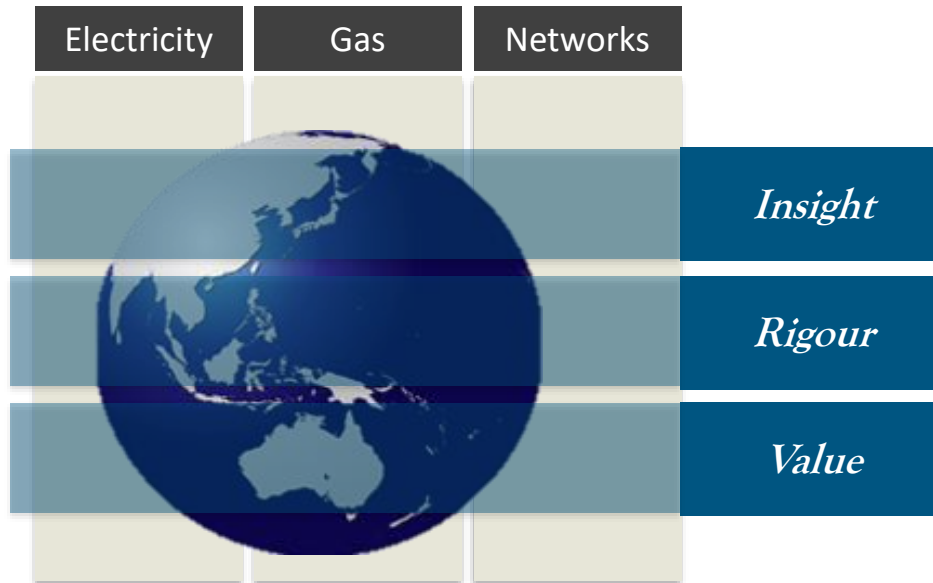
We understand the fundamentals while recognising practical limits, political sensitivities, and commercial realities of each market. We see opportunities and risks from all angles – for the benefit of our clients

Focus and Dedication

We own our company, so when we say we are dedicated to our clients we mean it. Our reputation matters. We are directly incentivized to assist our clients in ways that generates value over the long term. Furthermore, our senior team members are actively involved in the execution of mandates and assignments, interacting directly with our clients on a regular basis.

The analysis of power meets the power of analysis.

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