

POWERWEEK

• 5 DAYS • 1 CONFERENCE • 3 WORKSHOPS • 2 SUPPLEMENTARY MASTERCLASSES • 1 VENUE

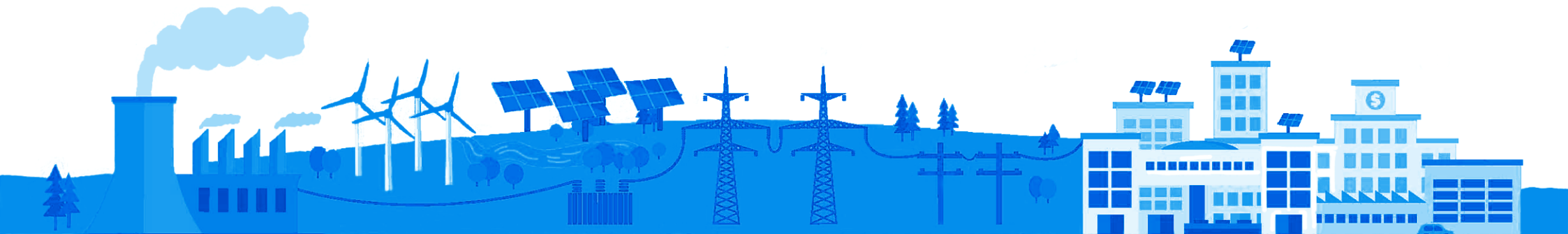
7 – 11 November 2016, PARKROYAL on Beach Road Hotel, Singapore

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Welcome to POWER WEEK 2016

Designed for the global electric power & energy industry, **POWER WEEK** provides 5 days of networking opportunities, consisting of 2-day conference as the focal event, 3 workshops, 2 supplementary masterclasses, multiple case studies, expert views, and valuable insights on market outlook.

Meet your industry peers from electricity regulators, national power companies, renewable & IPPs, investors and suppliers - all at one platform. It would serve as an opportunity to engage with top industry players from around the globe. With the vast range of participants at this exclusive event, learn about the success strategies and pitfalls of well-known power projects, through our intense case studies. With valuable insights on policy & regulations, technology innovations for generation / transmission / distribution, environmental impacts, fuel supply sources, renewable / hydro / nuclear / gas to power developments, power trading, IPP projects, investment & financing, power contracts & negotiations and many more from C-level expert speakers & attendees, **POWER WEEK** is certainly an event not to be missed!

6 Reasons why you should not miss this **electricity & energy** show

PREMIUM NETWORKING

Unrivalled networking and exchange of experiences across 20+ countries

DISTINGUISHED SPEAKERS

The world's best practitioners and industry leaders sharing insights

PRACTICAL MASTERCLASS

5 comprehensive workshops & masterclasses over 3 weeks led by an unparalleled faculty of facilitators

COMPREHENSIVE CONFERENCE

20+ educational presentations reflecting your most concerned business issues

BUSINESS OPPORTUNITY

A celebration of the best technologies and innovations

UNDERSTAND THE MARKET

Learn what has actually worked based on case studies from the region and beyond

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POWER WEEK (groups)



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Distinguished Speakers



Wong Tin Song
Undersecretary
Ministry of Energy,
Green Technology &
Water (KeTTHA),
Malaysia



Chuah Kee Heng
Managing Director
SP Services
(Singapore Power),
Singapore



Abdullah Al Shehri
Governor
Electricity & Co-
Generation Regulatory
Authority (ECRA),
Saudi Arabia



Wouter Van Wersch
President & CEO
GE ASEAN,
Singapore



Stephen George Lewis
President
Voith Hydro,
China



Phumzile Tshelane
CEO
South African Nuclear
Energy Corporation
(NECSA),
South Africa



Christopher Huang
Managing Director,
Investment Banking
Morgan Stanley,
Hong Kong



Constant Van Aerschot
Executive Director
Business Council for
Sustainable
Development,
Singapore



Paddy Padmanathan
President
& CEO
ACWA Power,
Saudi Arabia



Adrian Lembong
Director,
Business Development
Adaro Power,
Indonesia



**Shaharul Farez bin
Hassan**
Executive Vice President
Malakoff Corporation,
Malaysia



Shigeru Muraki
Executive Advisor &
Former Vice Chairman
Tokyo Gas,
Japan



Mathias Steck
Executive Vice President
DNV GL Energy,
Singapore



James Allan
Director
Frontier Economics,
Australia



Jo Ryan
Economist
Frontier Economics,
Australia



Kiran Jethwa
Managing Partner
Fumase,
Malaysia



Kamilah Kasim
Partner
Allen & Gledhill,
Singapore



Lim Wen Bin
Director,
Power & Utilities
KPMG,
Singapore



Andrew Koscharsky
Director,
Energy
RCMA Group,
Singapore



William Byun
Managing Director
Asia Renewables,
Singapore

Programme at a Glance

Tue- Fri, 1- 4 Nov 2016	Mon, 7 Nov 2016	Tue, 8 Nov 2016	Wed, 9 Nov 2016	Thu, 10 Nov 2016	Fri, 11 Nov 2016	Mon-Fri, 14-18 Nov 2016
Add-on Masterclass Power Purchase Agreement (PPA)	Pre-Conference Workshop A Energy Market Investment & Financing	Main Conference Power Week 2016		Post-Conference Workshop B Mastering Renewable & Alternative Energies	Post-Conference Workshop C Mastering Power Contracts & Negotiation	Add-on Masterclass Gas / LNG Contracts: Structures, Pricing & Negotiation
09:00 Opening of Day						
<ul style="list-style-type: none"> Essentials of different PPAs Structure & negotiate fair and sustainable PPAs IPP development Pricing and tariff design Relationship between public, private, and government sector Policy and risk analysis PPA relationship with EPC, O&M, Fuel Supply, and Interconnect Agreement Electricity transformation and market design plans Today's private power investments Successful power project finance transactions Financial derivatives Electricity market based risks 	<ul style="list-style-type: none"> International trends in power developments 	<ul style="list-style-type: none"> Industry insight Electricity market outlook Innovation & competitions 	<ul style="list-style-type: none"> Environmental impact Paris Agreement Energy policy and regulatory framework 	<ul style="list-style-type: none"> Renewable energy trends in global supply & demand Renewable & alternative energies available for power generation 	<ul style="list-style-type: none"> Understanding common power and electricity contracts Mastering risk identification and management techniques 	<ul style="list-style-type: none"> Global gas/LNG market structure Gas/LNG trading Gas/LNG Sales and Purchase Agreement (GSPA/SPA) Gas Transportation Agreement (GTA) Gas Sales Agreement (GSA) Contract terminology and construction Operational, commercial and legal basis of gas, LNG and Gas Transportation Contracts Pricing strategy and price indexation Contract negotiation Operation of trading hubs, spot and arbitrage Transportation tariff
10:30 Morning Break & Networking						
	<ul style="list-style-type: none"> Managing market and regulatory risks 	<ul style="list-style-type: none"> Big data trend IPP landscape Panel discussion 	<ul style="list-style-type: none"> Renewables Hydro power Panel discussion 	<ul style="list-style-type: none"> Solar energy Wind energy 	<ul style="list-style-type: none"> Winning negotiation process 	
12:00 Lunch Break & Networking						
	<ul style="list-style-type: none"> Financing and investment trends in the energy market 	<ul style="list-style-type: none"> Power generation Emerging market Electricity liberalisation 	<ul style="list-style-type: none"> LNG market dynamics Coal based power generation Nuclear power 	<ul style="list-style-type: none"> Biomass Integrated power and energy storage 	<ul style="list-style-type: none"> Negotiation best practices Dispute resolution procedures 	
15:30 Afternoon Break & Networking						
	<ul style="list-style-type: none"> Practical exercise: Preparing a successful project 	<ul style="list-style-type: none"> Customer Engagement Panel discussion 	<ul style="list-style-type: none"> Power trading Panel discussion 	<ul style="list-style-type: none"> Bankability and commercial viability Policies, sustainability and future energy mix 	<ul style="list-style-type: none"> Group Exercise: PPA Negotiation 	
>> details at page 10	>> details at page 8	>> details at page 6	>> details at page 7	>> details at page 8-9	>> details at page 9	>> details at page 11
17:00 End of Day						

Why Sponsor/Exhibit

Relationships matter more than ever in the power & energy space. The success of the event will be determined by the number of quality contacts you make. Showcase your brand to a large audience of power utility experts at **POWER WEEK**.

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Meet high-quality influencers and decision-makers across the supply chain at the premier power & energy show

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Take advantage of speaking opportunities to direct your key messages to core audience

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Supporting Organisations



Official Newspaper

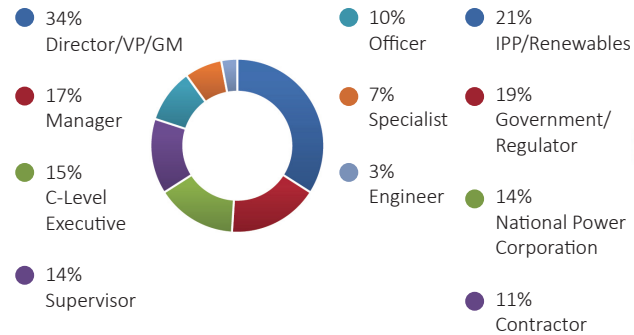


Premium Media Partner

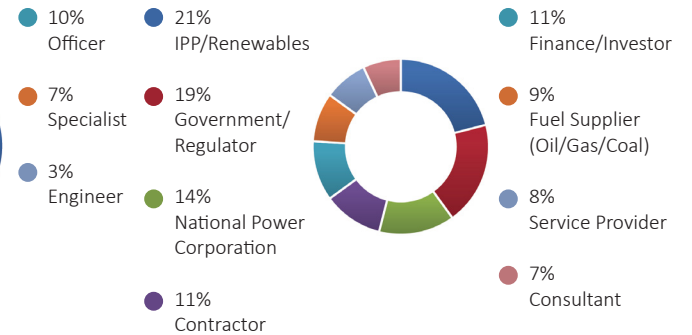


Who Attends

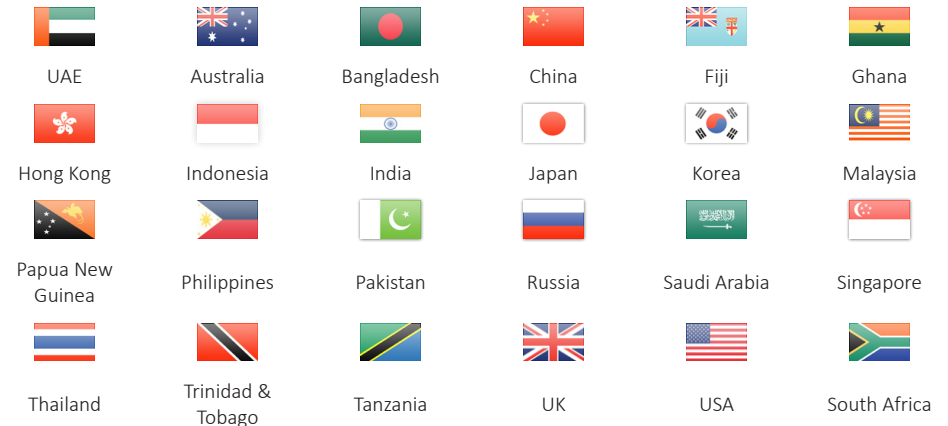
Job Role



Company Type



Past Participating Countries



Media Partners



08:30 Registration & coffee/tea

09:00 Chairman's opening speech

09:10 Industry insight: Examining what we are facing now in energy industry

- Power sector: Then & Now
- Key transformations that took place over the years
- Growing demand & securing supply
- Challenges: Demographic growth, climate change, urban expansion

09:40 Standing at the forefront of innovation and competitiveness in the future energy market

- Addressing the climate issues that has been brought in COP 21
- Driving factors that change the energy market
- Cutting-edge technology with high efficiency and low cost
- How to adopt to fast-changing strategic growth markets

Paddy Padmanathan, President and CEO, **ACWA Power, Saudi Arabia**

10:10 Managing competitive electricity market and enhancing legal and regulatory framework

- Providing an improved regulatory framework for gradual future sector unbundling
- Gradual change from vertically integrated utility with heavy subsidy and government support to a competitive electricity market
 - Planning and implementation stages
 - Triggering factors for the progress
- Encouraging greater private sector partnership
- Implementing rural electrification programmes

Abdullah Al Shehri, Governor, **Electricity & Co-Generation Regulatory Authority (ECRA), Saudi Arabia**

10:40 Morning break

11:00 Addressing the challenge utilities face – the next big thing beyond big data trend

- Utility was yesterday. Tomorrow is Internet of Electricity
- Why big data will be a complete game changer?
- A vision how future electricity grids could look like
- New business models for utilities to stay in the game today and in the future
- Disruptive technology for utilities

Mathias Steck, Executive Vice President and Regional Manager Asia Pacific- Energy & Renewables Advisory, **DNV GL, Singapore**

11:30 IPP landscape in ASEAN

- IPP development trends and opportunities: Malaysia, Myanmar, Vietnam, Indonesia.
- Supply & demand scenario for the future of IPP projects in ASEAN
- What you should know before investing IPP projects in ASEAN

Lim Wen Bin, Director, Power and Utilities, **KPMG, Singapore**

12:00 Panel Discussion: Energy demand, innovation & regulation

12:30 Lunch break

14:00 Power generation in emerging AEC markets

- New opportunities and trends
- Identify emerging AEC market key risks and how such risks can be mitigated
- Technological innovations making better energy efficiency possible
- Volatility of fossil fuels and electricity prices

Wouter Van Wersch, President and CEO, **GE ASEAN, Singapore**

14:30 Developing emerging market: Malaysia's experience

- Update on key & new trends, opportunities, and regulations
- Market drivers and constraints
- What foreign investors should take note of before investing

Shaharul Farez bin Hassan, Executive Vice President, **Malakoff, Malaysia**

15:00 Electricity liberalisation in Asia

- Reliability of electricity supply and efficiency of the system
- Expecting more transparent energy pricing?
- Legislative and regulatory framework for effective competition
- Case Study: Electricity Liberalisation in Singapore

Winning investment strategies in Asian energy market

- Cross-border investment within Asian utility market
- Key strategies to successful M&A
- Funding opportunities for renewables
- Key conditions to attract investments
- Achieving a national energy strategy through public-private synergies
- De-risking energy investments in Asia - Essential tools

Christopher Huang, Managing Director, Investment Banking, **Morgan Stanley, Hong Kong**

15:30 Afternoon break

15:45 Customer engagement and how to expand the conversation with customers beyond the bill

- Understanding customers and their needs
- Customising to their preference (energy)
- Delivering services digitally

Chuah Kee Heng, Managing Director, **SP Services Ltd, Singapore**

16:15 Panel Discussion: Keeping up with changing trends and challenges

16:40 End of conference Day One

08:30 Registration & coffee/tea

09:00 Chairman's opening speech

09:10 **Environmental impact of electricity generation and what Paris Agreement means to the energy market**

- Climate change, CO2 emission, global warming, greenhouse gas caused by electricity generation
- Environmental impact by industry: nuclear, hydroelectric, renewables
- What you need to know about historic climate agreement
- How governments and companies react to it

Constant Van Aerschot, Executive Director, **Business Council for Sustainable Development, Singapore**

09:40 **Energy policy and regulatory framework**

- Building a sustainable energy market by policymaking
- Security, quality, & efficiency of energy supply
- Key regulations on commercial energy activities

Wong Tin Song, Undersecretary, Sustainable Energy Division, **Ministry of Energy, Green Technology & Water (KeTTHA), Malaysia**

10:10 Morning break

10:30 **Renewables in the current energy supply landscape**

- Where are renewables now and going ahead?
- In light of the current turmoil in oil/shale markets
- A revisit of regulatory and policy risks post the Paris Climate Agreement
- "On the ground" in Asia

William Byun, Managing Director, **Aisa Renewables, Singapore**

11:00 **Sustainable hydro power developments and outlook**

- Hydro power plants, hydroelectric dams and generators
- Advantages of hydro power
- Case study: Developing hydro projects in China

Stephen George Lewis, President, **Voith Hydro, China**

11:30 **Panel Discussion: Renewables project financing & integration**

12:00 Lunch break

14:00 **New dynamics of LNG market and its implications**

- Expected dynamic changes of Asian LNG market
- Impact of US LNG and possibilities of competitive conditions
- Technological advancements to make natural gas most affordable, acceptable and reliable energy source in the energy mix

Shigeru Muraki, Executive Advisor & Former Vice Chairman, **Tokyo Gas, Japan**

14:30 **Mitigating environmental impact of coal-based power generation in Indonesia post Cop21**

- What are the environmental challenges Indonesia is facing?
- The future of coal-based power plants in Indonesia
- Moving on to a low-carbon path: policy reforms, new technology, investment

Adrian Lembong, Director, Business Development, **Adaro Power, Indonesia**

15:00 **Nuclear power: sustainability, safety and security**

- Trends, challenges, and development of nuclear power
- Developing the required skills to engineer, construct, & operate
- Nuclear power plant security: how to protect nuclear power plant from cyber attack
- Safety regulatory framework

Phumzile Tshelane, CEO, **South African Nuclear Energy Corporation (NECSA), South Africa**

15:30 Afternoon break

15:45 **Proven approach to successful power trading**

- Smart and flexible energy trading system for a rapidly changing energy market
- Planning the right strategy: market structure, participants, inputs, and financial tools
- Effective risk management with plans, techniques, and implementation

Andrew Koscharsky, Director, Energy, **RCMA Group, Singapore**

16:15 **Panel Discussion: Sustainability & future energy mix**

16:40 End of conference Day Two

Energy Market Investment & Financing

Mon, 7 November 2016 (09:00-17:00)

International Trends in Power Development

- Recent trends emerging in global energy markets, including market performance and key issues
- Increasingly innovative approaches to contracting emerging in wholesale energy markets, with case studies
- Resulting implications for investment and financing in the energy sector

Managing Market and Regulatory Risks

- Relationship between the nature and magnitude of market and regulatory risks
- The value and performance of energy sector investments
- Implications for assessing the value of energy sector investments, including:
 - Climate change policy
 - Market liberalisation
 - Developments in upstream markets
 - Recent global developments in the approach to regulating energy sector investments
- Strategies for understanding and mitigating market and regulatory risks

Financing and Investment Trends in the Energy Market

- Global financing trends of energy market investments
- Types of financial structures and instruments that are applied to energy sector investments
- Characteristics of investments that attract different types of investors, including the investment framework for renewable energy and the factors that influence internal and external investment
- Considerations for foreign investors seeking to invest or raise finance in an Asian context
- Major issues facing energy market investment in the future

Practical Exercise: Preparing A Successful Project

- A practical session in which you will respond to a competitive tender issued by the government who is seeking an independent power project to meet future energy needs
- You will develop a project that meets the government's requirements, while successfully attracting the investment required to maximise your likelihood of winning the tender
- The session will review parameters including:
 - The key components of project financing for power projects
 - Role of project financing in competitive tendering for power projects
 - Managing project costs more effectively

Workshop Leaders



James Allan, Director, **Frontier Economics, Australia**

James has advised most of the major electricity and gas businesses, policy makers and multi-national energy companies. In Asia, James has advised Singapore Energy Market Authority (EMA) and the Malaysian Government. In Australia, he has worked with the Commonwealth and NSW Governments designing and implementing their electricity reforms, the Australian Energy Market Commission (AEMC), the Independent Pricing and Regulatory Tribunal of NSW (IPART) and a number of other State regulators.



Jo Ryan, Economist, **Frontier Economics, Australia**

Jo advises public and private sector clients on a range of regulatory and market issues. She has particular expertise in the areas of wholesale energy market design and implementation, energy market regulation, strategic and transactions advice and market structure and competition.

Mastering Renewable & Alternative Energies

Thu, 10 November 2016 (09:00-17:00)

Renewable Energy Trends in Global Supply & Demand

- Global trends in renewable and alternative energy investment
- What's the right energy mix between renewable energy and conventional energy?
- Technology updates on renewable energy
- Alternative futures for primary energy supply without ignoring fossil fuels
- Opportunities for energy efficiency

Renewable & Alternative Energies for Power Generation

- Nuclear energy: Fission vs Fusion, technology, safety & waste handling/decommissioning issues
- Biomass & waste for power generation
- Hydro power
- Marine energy: wave & tide
- Geothermal power: high temperature & medium temperature opportunities
- Hydrogen & fuel cells for power generation

Solar Energy

- Successfully taking solar projects through from development stages to commissioning
- Learning from the know-how of foreign project developers
- Tariff structures & mechanisms for solar power generation
- Solar Parks model to better leverage government funds
- Solar thermal for heating
- Concentrating solar power
- Concentrating Photovoltaic (CPV) technology
- Solar inverters and optimisers
- Case study/Open discussion

Wind Energy

- Global wind capacity & onshore wind power generation
- Offshore wind
- Large scale wind vs small scale wind
- Bladeless wind turbines

Energy Storage

- Intermittency of solar and wind
- Types of energy storage
- Cost of energy storage

Biomass & Waste-to-Energy

- Case study: Europe, Japan, Korea, and Philippines
- Feedstock security
- Sources of biomass & biomass pelleting industry
- Sustainable cultivation of biomass
- Biomass vs Coal
- Torrefaction of biomass as a replacement of coal
- Refuse-derived fuel from Municipal Solid Waste (MSW) as a coal substitute

[continued on next page >>>](#)

Mastering Renewable & Alternative Energies

Thu, 10 November 2016 (09:00-17:00)

[<<< continued from previous page](#)

Integrated Power and Energy Storage

- Symbiotic relationship
- Co-location of solar & energy crop farming
- Economic benefits
- Social and environmental impact
- Improving returns with innovative renewable energy co-generation strategies for baseload power generation
- 100% renewable power for distributed power generation & large-scale centralised power grids

Bankability and Commercial Viability of Renewable Energy

- Technical and commercial considerations for industry
- Real-world challenges in renewable energy project development & risk mitigation strategies
- Business models for renewable energy industry
- Due diligence & financial parameters for a bankable project
- Risks vs returns expectations
- Raising capital for renewable energy
- Investment challenges of renewable energy
- What are the strategies to improve profitability
- Improving returns with innovative renewable energy co-generation
- Introduction to the triple bottom line (TBL) framework & improving bankability using sustainable triple bottom line strategies
- Financiers strategies for improving due diligence

Policies, Sustainability and Future Energy Mix

- Key roles for China, India and the developing world in future energy mix
- Post-COP21: Future policy trends for renewable energy & conventional power
- Rebalancing subsidies & carbon pricing for renewable energy & conventional power
- Can we live on renewables alone? Wishful thinking versus reality
- Sustainable strategies and global energy scenarios
- Scaling up renewables and energy efficiencies: thinking big

Interactive session

Workshop Leader



Kiran Jethwa, Managing Partner, Fumase, Malaysia

Kiran has vast experience in renewable energy and 20+ years of high tech industry experience, including project advisory, fund raising, project finance, project development, marketing, business development and mentorship. Fumase is an Asset Management company based out of USA & Malaysia with a focus on Renewable Energy. With its own fund, Fumase's vision is to develop & invest in a portfolio of 2 GW renewable energy projects by 2022.

Mastering Power Contracts and Negotiation

Fri, 11 November 2016 (09:00-17:00)

Understanding Common Power and Electricity Contracts

- PPA sales and purchase agreements
- Offers/bids in wholesale markets
- Transport agreements (transmission and distribution)
- Project vehicle agreements
- EPC construction contracts
- O&M contracts
- Feedstock (coal, gas, LNG) supply agreements

Mastering Risk Identification and Management Techniques

- How to identify, assess and allocate risks
- key techniques to mitigate disputes arising

Winning Negotiation Process

- Preparation
 - Identification and assessment of BATNAs (best alternative to a negotiated agreement)
- Key issues to be negotiated in particular power contracts
 - Power Purchase Agreements (project specific and non-project specific)
 - Contracts for differences
 - Timing for commencement of obligations
 - Pass-through of risk (e.g. interruption in feedstock)
 - Payment relief
 - Retail agreements
- Common issues in the negotiation of power contracts
 - Force Majeure
 - Boiler plate provisions (so called)

Negotiation Best Practices

- Persuasion skills
- Understanding the interests of all parties
- Creating common ground
- How to handle difficult contractors

Dispute Resolution Procedures

- International arbitration for private sector party to party power contracts
- International arbitration with governments
- Key issues in negotiating international arbitration clauses

Group Exercise: PPA Negotiation

Workshop Leader



Kamilah Kasim, Partner, Allen & Gledhill

Kamilah practises as a dispute resolution lawyer on large complex engineering and energy projects. She has negotiated and drafted many agreements including concession, power purchase and construction and engineering contracts. She has also handled related project documents including for power plants (gas-fired, coal-fired, combined cycle gas turbine and hydro-electric), petrochemical plants and buildings in the region.

Day 1

Introduction and New Energy Outlook

- Energy transition and impact on PPAs
- Role of subsidies
- Role of IPPs and PPAs in market
- What are the main risks and challenges of IPP
- What determines success or failure of IPP projects
- Support mechanisms: security of supply
- Impact of Paris Climate Deal

Case Study: Lake Turkana Wind Power Project, Kenya

Global Electricity Market Trends Driving PPA

Investments

- Power market reforms
 - Growing impact of renewables
 - Future potential new renewable technologies
- Pricing
- Efficiency
- Changing role of utilities in electricity value chain
 - Energy transformation drivers
 - Traditional vs. emerging value chain
- The Energy Trilemma

Case Study: 10 Future Energy Sources

Electricity Wholesale Markets Development

- Regulated vs. Merchant markets
- Difference between retail and wholesale markets
- Typical products in wholesale markets
- Energy trading opportunities
- Commercial and physical relationships
- Trading market organisation
 - Power pool vs. power exchange
 - Generation bidding for dispatch

Case Study: The Nigerian Power Market Reform

Electricity Pricing Dynamics

- Main price drivers
- Short run marginal costs
- Volatility
- Seasonality
- Mean reversion
- Spark and dark spreads

Case Study: Enron and the California Power Market

Day 2

PPA and IPP structure

- Typical IPP structure
- Key IPP contracts
- Typical funding of IPP's
- Different milestones
- Financial close
- Construction completion
- Commercial operations date

Case Study: Dabhol Power Plant

Power Purchase Agreement: Key Features

- PPA and IPPs
- BOT and BOO schemes
- Extension
- Termination
- Commissioning process
- Tariff
- Sale and purchase
- Output guarantee
- Minimum delivery obligation
- Invoice and billing
- Curtailment
- Transmission
- Point of delivery
- Milestones and defaults
- Buyers default
- Sellers default
- Non default events
- Post-termination obligations – put and call option
- Lenders step in rights
- Purchase prices
- Force majeure
- Liquidated damages
- Credit enhancement
- Insurance: construction phase & operations phase
- Dispute resolution

Case Studies:

- Summary of PPA gas-fired plant
- Full PPA renewable power plant

Power Sales Agreements: Basic Types

- Power Purchase Agreement
- Merchant power structures
- Tolling agreements
- Contract for differences (CFD)
- Feed-in tariff with preferential dispatch
- Synthetic Power Purchase Agreements
 - Put and call options and CFDs

Day 3

Pricing in PPA

- Pricing structure in PPA
 - Capacity charge
 - Energy charge
 - Supplementary charge
- Pricing formula
 - Flat
 - Fixed or floating escalator
 - Others
- Escalating prices
 - Discount rate
 - IRR, WACC

Tariff Design in PPA

- Feed-in tariff
- Cost of service tariff design
 - Building blocks of tariff design
 - Functionalisation
 - Classification
 - Allocation
- Understanding pricing alternatives

Power Plant Economics

- Investment decisions
- Technology types and qualities
- Levelised electricity costs
- Key variables for generating plants technologies
- Relative cost of electricity by generation source
- Technology and risks
- Net present value vs. real options approach

Overview of Project Finance in the Power Sector

- Concept of project finance
- Project finance structure
- Banks and power project finance
- Project finance waterfall
- Investors and appetite for risk
 - Equity market
 - Future challenges from investor/lender's perspective
- Financial analysis
- Private vs. Public funding
- Types of financing
- Impact of debt tenor on tariff

Case Study: Project Finance Structures of different IPP Projects

Day 4

Effective Contract Management

- Rights, roles, responsibilities and obligations of the parties
- Record keeping and document control
- Change management and speedy resolution of technical disputes
- Claims
- Time bar and limitation

Example: International Examples of Commercial Deals Using PPAs, Both Short and Long Term

Essentials of PPA Negotiation

- The negotiation process
- Key issues
 - Responsibilities in PPA
 - Implementation schedule
 - Connection arrangements
 - Procedures
 - Operational targets and penalties for default
 - Definition events of default
 - Definition of force majeure
 - Fuel procurement
 - Dispute resolution
 - Level and structure of tariff
 - Evaluating unsolicited proposals
 - Security package
 - Termination options

Risk Assessment

- Risk allocation and mitigation
- Construction period risks
- Operation period risks
- Project risks and mitigation
- Sensitivity analysis
- Project risk assessment matrix

Exercise: Risk Assessment IPP project

Final Exercise/Role Play: IPP and PPA Negotiation

- Practice in negotiating a PPA, including the terms and price elements

"Excellent! There are many interesting topics which cover almost all relevant issues in electricity market, such as market reform and PPA negotiation. And the speaker is simply great."
Head of PPA, Electricity Generating Authority of Thailand

Day 1

Gas / LNG Industry Overview

- Measurement units applicable to gas/LNG units
- Gas/LNG chain and definitions
- Gas transmission by pipeline, LNG, CNG and GTL – comparative summary
- Technology innovation
 - Shale gas / FRSU / FLNG / Small-scale LNG
- Global gas/LNG trade
 - International pipeline trade
 - Geopolitical issues
 - Global supply/demand position
 - Profile of gas trade in Asia Pacific, Africa, Atlantic, Middle East, Europe and USA
- Gas/LNG market structure and gas industry regulatory issues
 - Vertically integrated structure
 - Unbundled operation
 - Contract carriage/open access

Exercise: Daily demand to contract volumes**Gas/LNG Contract - Principles and Contracting Options**

- Basic principles
- Interdependence of contracts in the gas/LNG chain
- Operational, commercial and legal basis for long-term contracts
- Contract aim: risk mitigation and commercial value
- LNG/Gas Sales and Purchase: examples, analysis reasons for success/failure

Discussion: Role of Conditions Precedent**Gas/LNG Contracts Principles**

- Introduction to terminology and contract terms
- Background to long-term gas contracts
- Key aspects of gas/LNG contracts

Exercise: Contract volumes & payments**Gas/LNG Contract Elements**

- Gas/LNG Contract types- Depletion, Supply
- Elements of gas/LNG Contracts
- Legal responsibility, technical and commercial elements
- Obligations on supply, commencement, quality, price, information flow

Discussion: Causes of failure to perform

Day 2

Explanation Key of Gas/LNG Contract Articles

- Overview of contracts in the gas chain
- Gas contract terminology (with calculation methodologies)
 - To cover DCQ, ACQ, MDQ, Take or Pay, Make Good, Make up, Carry Forward, Shortfall and Annual Reconciliation
 - Review of Force Majeure, Dispute Resolution, Termination, Liabilities, Indemnities, Governing Law, Gas Measurement and Gas Quality

Exercise: Reconciling actual with contract volumes and payments**Development of Gas/LNG Contract Articles and Model GSPA**

- Review of GSPA contract flow sheet
- Further development of articles for drafting of GSPA
- Appendix: Model Gas Sales and Purchase Agreement

Discussion: Assembling team with required expertise**LNG Contract Principles and Model SPA**

- Review of LNG SPA contract flow sheet
- Structure of contracts for sale and purchase of LNG
- LNG Ex Ship Contract principles
- LNG FOB Contract principles
- Appendix: Model LNG Sales and Purchase Agreement

Exercise: Practical aspects of payments**Contract Trends, Issues & Summary Comparison Between Gas and LNG Contracts**

- Trends in LNG contracts
- Specific issues:
 - Side letters
 - Payment security mechanism
 - Price revision and re-opener
- Summary comparison between gas and LNG contracts

Discussion: Issues arising at interface between gas and LNG supply contract**Exercise: Likely disputes and potential amounts at issue**

Day 3

Shipping and Risk Mitigation

- Types of ship
- LNG ship chartering, CIF, FOB, Time Charter, Bareboat and Contract of Affreightment
- Commercial implications, allocation of shipping risk to different parties
- LNG/gas contract risk allocation and mitigation measures matrix tool

Exercise: Differences between FOB and CIF**High Pressure Gas Transmission**

- General background
- Physical aspects affecting transportation contracts
- Standard contract articles
- Gas balancing, overrun and underrun
- Appendix: Model Gas Transportation Agreement (GTA)

Discussion: Public policy and allocation of risk**Flexibility Mechanisms for Gas and Related Contracts**

- Flexibility mechanisms available for gas:
 - Supply & demand
 - Infrastructure
 - Gas markets
- Related contracts
 - Spot contract
 - Tolling contract
 - Regasification contract

Exercise: Available mechanisms for flexibility**Gas/LNG Contract Negotiation – Principles and Techniques**

- Steps in progress of negotiation
- Contract law and legal significance
- Important concepts: balance of power between two parties, mutuality, interpersonal orientation, Best Alternative To No Agreement (BATNA), resistance point
- Contract negotiation stages – preparation, fact finding, proposal, bargaining, tradable variables, offer of concession and non-negotiable item concept
- Case Studies and discussion
- Appendix: Model Heads of Agreement (HoA) for a gas sale

Exercise: Preparation of negotiation plan

Day 4

Gas/LNG Pricing

- Basic principles and main drivers
- Current international pricing trends
- 'Rational' price setting example for Local Distribution Company (LDC)
- Load factor based pricing

Exercise: Commercial implications of local and international pricing**Economic Evaluation and Financial Modelling**

- Economic evaluation
 - Cost of capital benchmark
 - DCF analysis parameters
 - Sensitivity analysis
- Modelling applicable
 - To determine gas assets project's rate of return
 - To work out the gas price and gas transportation tariff
- Model quality management issues

Discussion: Keeping sight of judgement**Gas Pricing Methodology**

- Gas pricing based on regulation
- Gas pricing based on Net Back method
- Global LNG pricing methodologies:
 - Oil price indexation, (JCC crude parity etc.), Henry Hub (USA), NBP (UK) & TTF (NL), Negotiated base price (P₀) indexed by crude derivatives (weighted)
- Pricing indexation methods:
 - Absolute value on price of reference fuel/basket of fuels
 - P₀ indexed to reference fuel
 - Mixed indexation based on different weighting of reference fuel
 - Ceiling, floor, S-curve
 - Linkage to product prices

Exercise: Selling HH priced gas into Asia or Europe**Transportation Tariff**

- Tariff determination methodology – DCF and COS
- Revenue target and cost recovery methodologies in transportation tariff determination process
- Capacity & commodity based tariffs

Exercise: New pipeline tariffs estimation

Day 5

Gas/LNG Trading

- Why trading is necessary
- Gas spot market, arbitrage and swaps
- Regional gas market pricing variation
- LNG trading background
- LNG arbitrage: illustrative example
- Trading function within a natural gas company

Exercise: Gas/LNG Sales/Purchase Strategy**Group Discussion: Considerations underlying LNG production and sales strategy****Group Exercise on Gas/LNG Chain Contracting, Pricing and Key Terms**

- Key issues for contract parties in
 - LNG Sales and Purchase Agreement (SPA)
 - Gas Sales and Purchase Agreement (GSPA)
 - Gas Transportation Agreement (GTA)
 - Gas Sales Agreement (GSA)
- Negotiation simulation of contract positions on transfer pricing, projects scheduling, conditions precedent, default liabilities, force majeure and pricing for each of:
 - LNG producer
 - LNG importer
 - Gas distributor
 - Gas transmission company
- Group discussion

Project Finance and Risk Sharing

- Background
- Criteria for financing capital projects
 - Recourse financing
 - Limited recourse financing
 - Non recourse financing
- Risk sharing
 - Political risk mitigation
 - Project lenders' expectations
- Project finance market

"The best gas / LNG course I have ever attended. I will gladly recommend it to anyone."

Past participant, Chevron



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