4 DAY Course Outline

Power Purchase Agreements

for Emerging Countries

Overview

This intensive and highly interactive four day hands-on course will provide a comprehensive analysis of issues associated with electric power projects and the project financing in general and the Power Purchase Agreements (PPAs) in particular. In working through analysis of PPAs, a mixture of case studies, lectures and analytical exercise will be used. The way in which power is sold (PPA, merchant, tolling, feed-in tariff with preferential despatch etc.) is arguably the most important determinant of project financing and therefore these agreements are worthy of particular attention. There will be a specific focus on Power Purchase Agreements. PPAs can be used by Independent Power Producers (IPPs) to either sell conventional power or renewable energy and thus being able to attract the necessary financing. During the course the key features of different power purchase agreements are discussed in depth, as well as the way in which risks could be assessed and allocated.

Benefits of attending

- Get an overview of project finance in the power Sector
- Learn about all the essentials of the different PPAs
- Manage to perform a policy and risk analysis of PPA Contracts
- Get an analysis of the impacts and risk associated withe the technology choice
- How make a tariff design for a PPA
- Risk evaluation of projects in the energy sector
- Understand how financial derivatives can be used as an effective hedge of financial and electricity market based risks

Who should attend

- Corporate Finance / Corporate Treasury
- Audit / Risk Management
- Research & Analysis
- Sales & Trading
- Investment Management

- Origination
- Structured Finance
- Funding
- Government
- Regulation / Compliance / Documentation

Teaching Methodology

This highly interactive course will be based on lectures and discussions and case study exercises.Case studies and numerous examples from the Course Director's own experience of the global energy sector will be used to ensure understanding and demonstrate the application of concepts. The cases and examples support the application of the newly gathered knowledge in practical applications. Furthermore, cases stimulate independent thinking and discussion among participants.

The Program

Global trends driving Power Purchase Agreements (PPAs), electricity market designs & merchant power investments

- The context in which today's PPAs operate
- The trends driving the creation of wholesale power markets and merchant power
- Energy sector unbundling
- Operating efficiency
- Independent regulation
- Private sector investment
- Demand side management
- System reliability energy price risk
- Power market exchanges

Overview of the power industry in developing countries

- Conventional power generation technologies
  - Coal
  - Fuel oil
  - Gas
  - Nuclear
  - Hydro
- Renewable technologies
  - Wind
  - Landfill gas
  - Biomass
  - Hydro
  - Wave/tidal energy

    - Solar
- Developments in and Reform of the Industry
    - Deregulation, restructuring and privatisation of the industry
    - Role of regulator
- Liberalisation of the Electricity Industry (capacity short)
- Use of Independent Power Projects in developing countries

Structures and working energy markets

- Review of the organisation of energy markets, trading venues and trading purposes.
- Correlation between electricity, gas, oil and coal markets
- Fundamentals of physical and financial trading
    - Power
    - Natural gas
    - LNG
    - Coal
- Energy markets and how they function:
    - OTC vs. exchange trading
    - Spot vs. forward trading
    - Current trends and developments

Electricity Value Chain

- Electricity value chain
    - Fuels, Generation, Transmission &Distribution, Wholesale and retail
- Portfolio of Contracts
    - Forward sales, retail supply, fuel, Freight, hedges etc.
- Sources of Risk
    - Market, Credit ,Operational, Legal and regulatory , Business ,Strategic and Reputation Risk

Power Price Dynamics

- Non-storability
- Price Drivers; supply and demand, weather and others
- Evolution of volatility in energy markets
- Comparing spot with forward volatility: spikes and mean-reversion
- Seasonality
    - Causes of seasonality
- Correlations

Power Plant Economics

- Technologies power plants
    - Base load
    - Iintermediate or cyclic plant
    - Peaking plant
- Supply
- Demand
- Understanding the generation stack
- Operating decisions of a power plant
    - Efficiency curves and heat rates
    - Minimum on- and off-times
    - Ramp time
    - Nonconstant heat rates
    - Response rate
    - Minimum electricity dispatch level.
- Competition
- Role Exchange

Overview of Project Finance in the Power Sector

- What is project finance
- History and current market developments
- Differences between corporate and project lending
- Why do sponsors choose project finance
- The risk-reward relationship with the project
- Comparative economics of renewable energy sources
- Types and impacts of incentive programmes
    - Environmental credits and feed in tariff structure

Structuring Independent Power Projects (IPPs) & the Role of the Power Purchase Agreement (PPA)

- Unique requirements of non-recourse project financing
- How it determines the structuring options for Power Purchase Agreements
- Lender’s and financier’s requirements when it comes to evaluating PPAs

Structuring & Contracting Requirements for Merchant Power Investments

- Understanding of the common risk allocation models for merchant power projects
- Investment decision-making tools
- Examples of merchant power risk allocation and structuring will be selected from the energy investment experiences of the United Kingdom, Latin America, or the USA

Power Plant Valuation Approaches

- Main approaches
  - Sales comparison approach
  - Income approach
  - Cost approach
- Intrinisc Valuation
- Price Uncertainty and Real Option Valuation
  - A power plant as an option

Financing merchant power investments & electricity price modeling under competition

- Investment analysis and structuring requirements of merchant power financing, including limited-recourse project financing, and how it is determined by the project's unique risk allocation matrix.
- General models for estimating and reviewing merchant power tariffs and prices in a competitive wholesale power market

Other contract structures and issues in power and renewable energy projects

- Fuel supply agreements
- Operations & maintenance agreements
- Long term service agreements
- Quantitative risk assessment in a power generation project

Basic Types Power sales agreements

- Power Purchase Agreement
- Merchant Power Structures
- Tolling Agreements
- Contract for Differences (CFD)
- Feed-in tariff with preferential despatch

Key features Power Purchase Agreement (PPA)

- What is a PPA
- Differences for base load, mid-range or peaking thermal plant or hydro plants
- When PPA appropriate
- Basic terms Power Purchase Agreement
    - Length of the Agreement
    - Commissioning Process
    - Sale and Purchase
    - Curtailment
    - Transmission Issues
    - Milestones and Defaults
    - Credit
    - Insurance
    - Environmental Attributes or Credits
    - Risk issues
    - Issues and Strategies

Pricing PPA

- Pricing Formula
    - Flat
    - Fixed or Floating Escalator
    - Others
- Energy Factor and Unit Charge
- Determination of Base Rate

Case Study; Analysis PPAs

- Country case studies
- Detailed example PPAs

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Fundamentals of Negotiation Theory and Practice

- Negotiation process
- Art and science of persuasion
- Preparation
- Understanding the interests of all parties
- Creating common ground
- Team composition

Final Exercise: Role Play PPA Negotiation

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

Your Course Director; Kasper Walet

Kasper Walet has 25 years of experience and extensive knowledge on a theoretical and practical level about all the aspects related to trading, derivatives and risk management in the commodity industry.

Kasper received a Masters degree in Law from the University of Utrecht in 1987. He started his career at the NLKKAS, the Clearing House of the Commodity Futures Exchange in Amsterdam. After working for the NLKKAS for five years, Kasper was appointed as Member of the Management Board of the Agricultural Futures Exchange (ATA) in Amsterdam at the age of 31. While working for the Clearing House and exchange, Kasper became an expert in all the aspects of trading and risk management of commodities.

In 1997 he founded his own specialist-consulting firm that provides strategic advice about (energy) commodity trading and risk management.

Kasper has advised government agencies such as the European Commission, investment banks, major utilities and commodity trading companies and various exchanges in Europe, CEE countries, North America and Asia. Some of the issues he has advised on are the development and implementation of a Risk Management Framework, investment strategies, trading and hedging strategies, initiation of Power Exchanges (APX) and other trading platforms, the set-up of (OTC) Clearing facilities, and feasibility and market studies like for the LNG Market.

Kasper has given numerous seminars, workshops and (in-house) training sessions about both the physical and financial trading of commodity products. The courses have been given to companies all over the world, in countries like Japan, Singapore, Thailand, United Kingdom, Germany, Poland, Slovenia, Czech Republic, Malaysia, China, India, Belgium and the Netherlands.

Kasper has published several articles in specialist magazines such as Commodities Now and Energy Risk and he is the co-author of a book called *A Guide to Emissions Trading: Risk Management and Business Implications* published by Risk Books in 2004.