



# Energy Derivatives

A 2 day course, offering a comprehensive introduction to the energy markets and sector specific derivatives

- Energy Pricing and Derivatives
- Oil Markets and Derivatives
- Natural Gas Markets and Derivatives
- The Coal Markets
- The Electricity Markets
- Carbon Markets and Emissions Trading

# DAY 1

## ENERGY PRICING AND DERIVATIVES

- The different types of energy and energy markets
- Energy market drivers
- Market users and participants
- Spot and Forward pricing
- Forward curves, limitations of forward pricing and the changing shape of the forward curve
- Calculating the convenience price and yield
- Energy derivatives – Delta One
  - Futures
  - Pricing an energy swap
  - Take or Pay contracts
- Energy derivatives – Options
  - Option valuation using Blacks'76
  - Energy exotics – Asians, Spread and Swing
  - Energy Caps, Floors and Collars



Workshop – Energy Derivatives Applications

## OIL MARKETS AND DERIVATIVES

- Introduction to oil – world reserves and production
- Crude types – sweet n' sour, Heavy n' light.
- Marker crudes and benchmark pricing
  - WTI
  - Brent - Dated Brent, Brent forwards, using CFD's to hedge the basis.
  - Dubai
- Differential Swaps and spreads
  - Pricing a differential swap
- Crude oil price drivers
- The refining process and distillates markets.
- Refining netbacks
- Pricing a Crack Spread
- Crack curves and using Cracks as distillate stock level predictors



Workshop – Energy swaps pricing

## THE COAL MARKETS

- Coal types and uses
- Demand versus supply and reserves
- Coal Pricing – International and USA
- Coal price drivers
- The coal market in 2008
- Coal pricing and freight costs
- Trading coal.



End of Day Quiz

## Day 2

### NATURAL GAS MARKETS AND DERIVATIVES

- Natural Gas types
- Gas market supply and demand: reserves and consumption
- Gas market drivers
- Transporting Gas
- The US Gas market
  - US Gas pipelines and Hubs
  - Market center(Hub) services
- Delivery basis
- Natural Gas basis swaps and spreads
- The UK Natural Gas market
  - UK Gas network, pipes and beaches
  - OCM trading
  - The European Gas market
- Natural Gas Storage
  - Storage media
- US Gas Storage, Easington Rough UK
- LNG
- NGL and Fractionation spreads
  - Calculating the shrink



Workshop - Natural Gas Swaps

### ELECTRICITY MARKETS

- Introduction to Electricity
- Electricity market structure.
- The electricity markets
  - Nord Pool
- UK Electricity market
- Electricity price drivers
- Electricity derivatives: forwards, swaps, spreads and options
- Electricity forwards
- Spark and Dark spreads
- Calculating Spark and Dark spreads
- The adjusted (clean) Spark spread

### CARBON MARKETS AND EMISSIONS TRADING

- Greenhouse gases and the Carbon markets
- Climate change history
- The Kyoto Protocol
- Emission Trading Schemes
  - EU ETS Phase I
  - EU ETS Phase II
- Clean Development Mechanisms
- Joint Implementation
- US Compliance Schemes
- Voluntary Schemes
  - The Climate Exchanges
- Trading Carbon Emissions
  - The shape of the EUA and CER forward curves
  - The EUA basis
  - EUA/CER spreads
- Correlations with fuels
- Emissions swaps



Power and Emissions Workshop



End of Day Quiz