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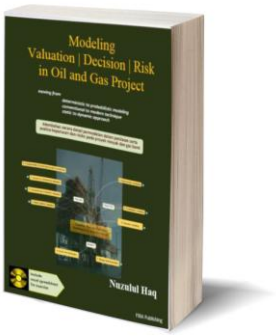
# REVISIT
# PETROLEUM ECONOMICS




***~ For avoiding common errors in DCF valuation method ~***

*a 3 day hands on excel based course*

**August 13th – 15th 2018 - De Java Hotel Bandung**

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**Introduction**

In a challenging oil and gas industry, it is very important to identify the uncertain variables and explore ways to minimize the downside risk and to maximize the upside potential. The advance probabilistic analysis is essential to understand the influences and dynamics of project economics with respect to the oil and gas industry becoming imperative for anyone undertaking the development of a new resource project.

SIPmath tool, a free licensed software from *probabilitymanagemet.org* facilitate the development of stochastic spreadsheet applications. This software can quickly create interactive monte carlo simulations in Excel, in which thousands of trials are run before the user's finger leaves the <Enter> key.

Based on the recent published book and using the SIPmath tools, this specially designed 3-day cutting edge course aims to provide a solid understanding of the latest valuation and risk analysis in oil and gas projects for improved investment decision.

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**Key Highlights**

- Move beyond the deterministic approach framework that is implicit in most current analyses to an explicit modeling and analysis using probabilistic approach
- Have acquired the skills to identify, model and evaluate the oil and gas project case using monte carlo simulation and real options analysis

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**Training Scheme**

- enable participants to identify and quantifying risk using probabilistic analysis
- learn how stochastic Monte Carlo simulation and Real Options Method could provide additional insights into the project characteristics that influence long term cash flow uncertainty and project NPV
- bring participants up to date on recent development in project modeling and evaluation using advance valuation techniques.

# Proposed Timetable

| DAY ONE | | |
|---|---|---|
| Duration | Topic | Descriptions |
| 08.00-10.00 | Upstream Contractual System | - Concession vs Contractual System<br>- Production sharing vs Service Contract<br>- Indonesian PSC, Malaysian PSC and other fiscal regime<br>*Exercise: Fiscal attractiveness benchmarking* |
| 10.15-12.00 | Fundamental Oil and Gas Economics | - Role of project valuation<br>- Key valuation drivers for oil and gas economics<br>- Valuation approach: cost, market and income<br>- Conventional valuation metrics: NPV, IRR, Pay out time |
| 13.00 – 15.00 | Fundamental difference between conventional and modern valuation | - Bias in conventional DCF valuation<br>- Concept of modern valuation (Real Options)<br>- DCF vs Real Options<br>- Risk free, price risk and residual risk premium<br>*Exercise: Building simple calculation – DCF vs RO* |
| 15.15 – 17.00 | The usage of market information | - Financial Market<br>- Forward contract<br>- Contango vs backwardation<br>*Exercise: Building PSC model using futures market data* |

| DAY TWO | | |
|---|---|---|
| Duration | Topic | Descriptions |
| 08.00-10.00 | Three Stage of Risk Analysis | - Risk vs uncertainty<br>- Conventional techniques:<br>1. Sensitivity analysis: Spider chart vs Tornado diagram<br>*Exercise: Building sensitivity model*<br>2. Scenario analysis: high, base, and low case<br>*Exercise: Building scenario model*<br>3. Simulation analysis:<br>- Random variables and probability distributions – the building blocks<br>- Summaries of probability distributions: means, variances and standard deviation<br>- Special random variables: Normal, lognormal and triangular |
| 10.15-12.00 | Probabilistic analysis Using SIPmath | - Define uncertainty variables<br>- Define distribution type fitted to each variables<br>- Analyze the cash flow deviation – DCF vs RO<br>- Analyze Net Cash Flow Discount Factor – DCF vs RO<br>*Exercise: Building probabilistic model* |
| 13.00 – 15.00 | Forward pricing model | - Lognormal single factor stochastic model<br>- Static stochastic forward price model<br>*Exercise: Integrate static stochastic forward price into probabilistic model* |
| 15.15 – 17.00 | Dynamic DCF vs RO | - Dynamic stochastic forward price model<br>- Analyze simulation result<br>*Exercise: Integrate dynamic stochastic forward price into Probabilistic model* |

| DAY THREE | | |
|---|---|---|
| Duration | Topic | Descriptions |
| 08.00-10.00 | Merger and Acquisition | - Share vs asset deal<br>- Value vs Price<br>- Effective acquisition strategies |
| 10.15-12.00 | Decision Tree Analysis | - Exploration drilling decision<br>- Value of Information (VOI)<br>*Harvard Case study: Penzoil vs Texaco* |
| 13.00 – 15.00 | Market approach - modern valuation for limited information | - Partial Differential – Paddock Siegel Smith model<br>- Valuation of undeveloped reserve<br>*Case study: Acquisition of HESS assets in Indonesia*<br>- Valuation of unexplored reserve<br>*Case study: Pertamina vs Hess in Semai V* |
| 15.15 – 17.00 | Fuzzy Pay Off method | - Pay off distribution<br>- Triangle approach<br>*Case study: building fuzzy pay off in PSC model* |

**Computer Requirements**

As the course is Excel-Based, it would be highly desirable if participants could bring with them their own laptop computer

**Training Material**

1. Extensive set of course notes detailing valuation concepts, numerical calculations and practical valuation examples.
2. Excel Spreadsheets Model for valuing oil and gas project.
3. SIPmath Software for Monte Carlo Simulation
4. Free book "Valuation Risk Decision in Oil and Gas Projects"

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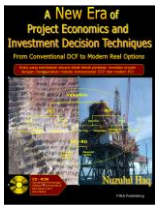
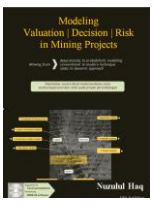
**Facilitator**








**Nuzulul Haq**, is a practitioner in project economics for more than 15 years with the latest position as Manager of Corporate Planning and Investment department in Medco Energy. He was graduated from Bandung Institute of Technology (ITB) in 1996. His career started as process engineer in Newmont and Newcrest. After he completed a master degree in financial management in Faculty of Economics, University of Indonesia in 2001, he started a career as a Planning and Economic analyst. His expertise focus on project economics, valuation modeling, econometric forecasting, risk analysis, real options/market based valuation, and asset portfolio management.

His technical papers had been presented in International Conference such as International Energy Economics Conference in Perth (2008), Berlin (2006) and Zurich (2004). He is a creator of http://explorerealoptions.id to promote Real Options methodology for better project investment decision.

He has also published some books as listed below:

2009 A New Era of Project Economics from conventional to modern approach
2017 Modeling Valuation Decision and Risk in Oil and Gas Projects
2018 Modeling Valuation Decision and Risk in Mining Projects

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| **Course Fee** | IDR 9.000.000,-/participant (Exclude accommodation) + 10% VAT,<br>Total IDR 9.900.000,-/participant<br>The Class will be held with minimum 5 Participants. |

## REGISTERATION INFO

**Xperiential and Professional Training** (**XP Training**)

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