Petroleum Economics and Risk Analysis

An Implemetation in PSC Gross Split vs Cost Recovery

Course outline

Current low oil price has made many oil projects were delayed while waiting for the situation strengthen. An analysis on operating and investment costs is therefore very crucial task. Any mistake in Project Development and operation together with weak control in costs will lead a profit reduction or even more a loss for the company.

Many people in the petroleum industry are concerned that their organizations may be destroying value by making systematic errors in investment evaluation and decision. Some common problems include: undervaluing long-lived assets and overbuilding production facilities

In a challenging petroleum 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 analysis using probabilistic model and Real Options method is essential to understand the influences and dynamics of project economics with respect to the petroleum industry becoming imperative for anyone undertaking the development of a new project.

This specially designed 3-day cutting edge course aims to provide a solid understanding how to evaluate of petroleum projects using conventional to advance approach.

Course objective

This course will :

- Learn the basic of evaluation techniques as well as the practical the implementation of these techniques to upstream project using both PSC and Gross split calculation
- Enable participants to identify and quantifying risk using probabilistic Monte Carlo Simulation
- Learn how to assess the value of information in managing the uncertainty of the upstream project using decision tree analysis
- Bring participants up to date on recent development in project modeling and evaluation using advance valuation techniques.

Key Benefit

At the end of the course participants will:

- Have acquired the knowledge of best practice of investment strategy in upstream project
- Have acquired the skills to identify, model and evaluate a project using deterministic and probabilistic approach

Who should attend this course

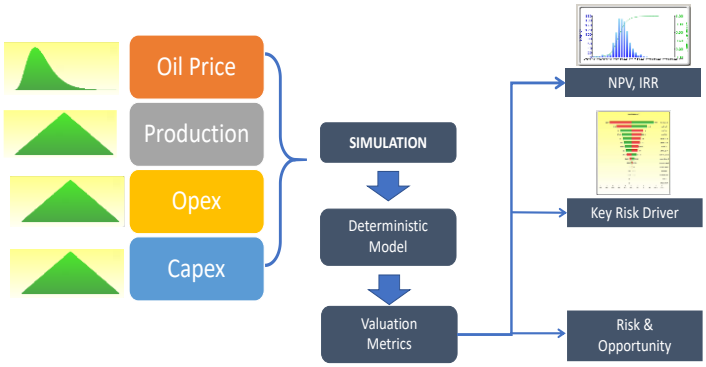
This three-day online course is designed for professional or investor who wants to learn investment evaluation in upstream project and to improve their skills in evaluating techniques including risk quantification.

Delivery Format

This course is conducted as 3 x 2-hour sessions on three consecutive days with 1-hour lunch break. At the end of each topic, a 15 minute question-answer session is held where the instructor gives individual assistance.

During the course live, instructor will show how to apply each topic by simulating in excel. Participants will follow this simulation by comparing with the final result.

Project Economic Modeling flow chart



Course facilitator

NUZULUL HAQ

Education:

- S1: Mining Metallurgy - ITB (1996)
- S2: Financial Management – UI (2002)

Work Experience:

- Metallurgist in Newmont Mesel (1997-1999)
- Process Engineer in Newcrest Gosowong (1999-2000)
- Planning and Economics – Medco Energi (2002-2017)
- Independent Consultant (2018 – present)
  - Founder of Decisive Value Consulting that specialize in advance project economics using modern valuation techniques for improved investment decision.
  - Author for several books related to Modeling valuation risk decision in resource-based industry

Petroleum Economics and Risk Analysis

- An Implementation in PSC Gross Split vs Cost Recovery regime -

Moving from the deterministic static approach to probabilistic dynamic approach framework for improved investment decision making in upstream project

Outline Day One – Conventional Economic Analysis

1. Fundamental of Upstream Economics

- Undiscounted Cash Flow Analysis (IRR, POT)
- Discounted Cash Flow Analysis (NPV, PI)

2. Upstream Contracts: Gross Split vs Cost Recovery

- Base split, variable and progressive split
- Unrecovered cost vs Tax Loss Carry Forward

Workshop 1:

Building a PSC and Gross Split cash flow model

3. Upstream Risk Analysis

- Identifying sources of uncertainty
- Three stages of Risk analysis
- Sensitivity analysis

Workshop 2:

Building scenario model (development and reserve scenario)

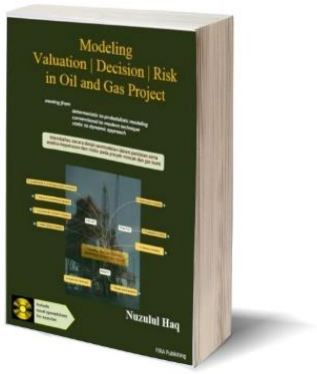
- Scenario analysis

Workshop 3:

Building sensitivity model (spider and tornado chart)

Course material

1. Extensive course notes and excel spreadsheets
2. Free SIPmath Monte Carlo simulation software
3. Free book " modelling valuation decision risk in oil and gas project " by Nuzulul Haq



Outline Day Two – Probabilistic Risk Analysis

4. Introduction to probabilistic risk

- Key features of a probabilistic model
- Key parameter of probability distribution

5. Monte Carlo simulation using Free SIPmath tools

- Schematic process of monte carlo simulation
- Quantifying variable uncertainty in upstream project using simulations techniques
- Assessing the effect of variable uncertainty on project's NPV
- Step by step how to use SIPmath software

Workshop 4:

Building a Monte Carlo simulation model using SIPMath tools

6. Decision Tree Analysis (DTA)

- Key features of DTA
- Quantifying Value of Information (VOI)

Workshop 5:

Assessing VOI in appraisal drilling prior to Final Development Decision (FID).

Outline Day Three – Modern Real Options Analysis

7. Introduction to Real Options

- Birth and intuition behind Real Options
- Conventional DCF vs Real Options (RO)

Workshop 6:

Fundamental difference between DCF vs RO

8. The Use of Market information

- Futures market
- Forward Price model

Workshop 7:

develop dynamic stochastic forward price model and integrated to economic model

9. Applied evaluation for acquisition activity

- Price vs Value
- Bid Value

Workshop 8: Valuation of Oil & Gas Block Acquisition