Key Benefits

- Introduces the participant to the fundamentals of Petroleum Economics
- Provides an overview of the key financial and economic means of project performance
- Provides a set of risk assessment tools including sensitivity, scenario, decision tree and Monte Carlo simulation analysis
- Introduces the participant to stakeholder analysis frameworks to identify stakeholder groups and their concerns
- Encourages participants to work together to collect and analyze data and make investment decisions.

Who Should Attend

This program is designed for energy managers, supervisors and key employees with broad functional responsibilities: financial, technical, operational, project development, as well as other professionals, who wish to expand their knowledge of investment and risk analysis in managing, developing, and reporting on energy projects.

Program Location and Schedule

The program will begin on Monday morning with registration at 7:30 am and end on Friday afternoon. Participants may be asked to stay later on some of the first few evenings to complete workshop sessions.
Introduction to Petroleum Economics and Energy Business Environment

Background on the fundamentals of economics and its application to the oil and gas industries. Provides an introduction to the oil and gas value chains and the identification of business opportunities along these chains.

Introduction to Financial Statements and Measures of Performance

Background needed to understand and build models of the four key corporate financial statements; review and discussion of the key measures of financial performance, consideration of the measures used by major companies and those of your company. Steps required to build pro forma financial projections to show how a new project will affect corporate performance.

Project Management Fundamentals

The oil and gas industry typically follows and IHRDC has developed its own five-phase process – from opportunity assessment to long-term operation – for analyzing and implementing a project.

Practical Use of Excel to Model Corporate Financials

Learn how the full capabilities of Excel can be used to model financial statements.

Documenting and Incorporating Key Project Variables Into Financial Models

Specification of all project costs and revenues: Pre-development costs, CAPEX, financing options, revenues, OPEX, taxes, net income, and cash flow.

Energy Project Economics and Measures of Performance

Project cash flow analysis, discounting cash flow to obtain present value and internal rate of return, the cost of capital and the effect of debt financing, other measures of project performance. Sensitivity to changes in key variables.

Energy Project Risk and Uncertainty

Identifying and quantifying energy projects risks and uncertainty into project analysis. Using statistical measures to quantify risk. Incorporating risk and uncertainty into project analysis. Two key risk assessment methods will be considered in this unit: scenario analysis and sensitivity analysis.

Probability Theory and Quantitative Analysis

Introduction to probability theory including probability density functions, overview of typical probability distributions, and definition of key terms. Applying probability theory in decision analysis with emphasis on concept of expected value.

Decision Tree Analysis

Applying a structured method for investment decision analysis. Understanding the implications of different sets of decisions. Identify areas to reduce risk and understand economic opportunity cost of capital. Identify implications of various forms of contracts. Analyze implications of incremental project decisions.

Monte Carlo Simulation

Extend the decision tree analysis framework for situations that include continuous probability scenarios. Identify power and limitations of simulations; emphasis is placed on relevance of expected value. Crystal Ball commercial software will be used to model risk in financial model.

Portfolio Theory and Real Options

Introduction to and discussion of Real Options and Portfolio Optimization – two other key methods used extensively today by many oil companies to evaluate project opportunities. Understanding how a collection of investments can decrease overall risk in the portfolio.

Managing Price Risk Using Financial Derivatives

Background on the use of financial derivatives to manage energy product price risk; commodity exchanges; key price risk management instruments: futures, hedges, swaps, and options. Setting a strategy to use derivatives to manage the risks of an energy project. Incorporating derivatives into the workshop financial model.

Stakeholder Impact Assessment and Analysis

Introduce different analysis frameworks to identify stakeholders affected by energy projects, assess the impact on each group identified, and develop strategies to address the social welfare.

IHRDC’s Business Game Workshops
Asia Onshore Business Game: Oceana

This business game is an integral part of the learning process. Participants, divided into teams, make real-life technical, financial, and market decisions that commonly confront managers in the international gas business today. Team performance is measured on a financial basis and is catalyzed by healthy competition.

Participants, working in teams, will evaluate an oil and gas business opportunity in the Republic of Oceana, near Indonesia. They build a financial model that will integrate various risks associated with the investment. This model will utilize a proposed Production Sharing Agreement and incorporate revenue, capital and operating costs, financing costs, and tax projections for the life of the project.

Throughout the week teams will add layers of complexity to the model by incorporating different types of risk analysis tools presented in the lectures. The teams will present their project analysis to a decision review board by outlining the risk profile and expected performance measures of the project. They then learn the outcome of those decisions. Emphasis will be placed on the practical implementation of the tools presented in lecture and on developing practical financial modeling skills.

INSTRUCTORS

For this program there will be a senior lecturer. He will be assisted by a Workshop Facilitator who will direct the business simulation sessions. Their backgrounds are as follows:

Rick Squires, an IHRDC Senior Lecturer, is the founder of PiEnergy, which provides consulting services to the energy industry. He has extensive experience in the international energy sector at the senior management level across a wide range of activities and fuels. Mr. Squires currently holds four non-executive directorships related to the energy business, including the $1.5 Bn fund managed by the U.K. Green Investment Bank. He was Non-Executive Chairman of a U.K.-based offshore hybrid gas and wind power company (250 MW), which was sold to a major European power utility. For four years, until early 2003, Mr. Squires was based in Boston, U.S., as Senior Vice President of InterGen, an international power company with 16 GW of power plants in ten countries. Prior to joining InterGen, Mr. Squires headed the Power Business within Shell Gas and Power, London. His career in Shell spanned over 25 years and included senior management positions in International Oil Trading, Shipping, Coal Business Development, and Marketing. While principally based in London, he also had assignments with Shell companies in South Africa and Japan. Before joining Shell, he worked for the South Western Electricity Board in the U.K. Mr. Squires holds a First Class Honours Degree in Electrical Engineering and a Masters Degree in Business Studies. He is a member of the Institute of Engineering and Technology, the Institute of Directors, and the Energy Institute.

Dr. Charles Brankman, Director of Instructional Programs with IHRDC, is a professional geologist and project developer who has been actively involved in a range of activities in the energy business, including E&P, engineering geologic consulting for the gas transmission and power generation sectors, and CO₂ enhanced oil recovery. After receiving a B.S. in geological engineering from Princeton University, Dr. Brankman earned an M.S. in structural geology from Stanford University. During his studies, he spent time at Mobil Oil Company in exploration and reservoir characterization. After Stanford, he worked in northern California as an engineering geologist on projects related to the siting of gas pipelines and power plants. He then pursued a Ph.D. in structural geology and earth resources at Harvard University, during which he taught several undergraduate courses and received several teaching awards. After receiving his degree from Harvard, he cofounded and served as Vice President of Geosciences at C12 Energy, a company focused on CO₂ oil recovery projects using anthropogenic CO₂.