

Contents

About the Authors	III
Preface	VII
Acknowledgements	IX

CHAPTER 1

Bidding and Petroleum Fiscal Instruments	1
1.1 Concessionary License Agreement	6
1.2 Contractual Agreement	8
1.2.1 Production Sharing Contract (PSC)	8
1.2.2 Service Contract	11
1.2.3 Joint Venture Agreement	11

CHAPTER 2

Exploration & Reserve Estimation	13
2.1 Discovered Resources	13
2.1.1 Basics of a Petroleum System	14
2.1.2 Geophysical Methods for Oil & Gas Exploration	22
2.1.3 Volumetric Estimation of Hydrocarbons in Place	37
2.2 Recoverable Resources (Reserves)	41
2.2.1 Proved Reserves	42
2.2.2 Unproved Reserves	50

CHAPTER 3

Appraisal and Field Development Planning	51
3.1 Field Appraisal	51
3.2 Comprehensive Field Development Data	58
3.2.1 Geological and Reserve Data	58
3.2.2 Reservoir Data	66
3.2.3 Reservoir Simulation and Production Forecast	82
3.2.4 Drilling Program and Well Completion Design Plan	94
3.2.5 Production Period and Abandonment	117

3.3	Technological Requirement & Challenges	123
3.4	Safety and Environmental Policy	123
3.5	Production Operation, Workover, and Maintenance Plan	124

CHAPTER 4

	Economic Analysis of a Typical Upstream Development Project	151
4.1	Basic Concepts in Economic and Financial Analysis	151
4.1.1	Economic Evaluation Indicators	151
4.1.2	Cash Flow Diagram	169
4.1.3	Discounting	177
4.1.4	Time Value of Money and Economic Equivalence	179
4.1.5	Depreciation and Salvage Value	196
4.1.6	Taxable Income	202
4.2	Case Study-Application of Economic Tools for Upstream Oil & Gas Project Evaluation	203
4.2.1	The Case Study (Data Presented Here Are not Real but Used for Exercise)	203

CHAPTER 5

	Investment Decision and Project Selection	215
5.1	Capital Budgeting and Rationing	215
5.2	Project Ranking	216
5.3	Comparison of Project Alternatives	217
5.4	Inflation	225

CHAPTER 6

	Project Management in Upstream Oil & Gas Field Development	229
6.1	An Overview of Project Management	233
6.2	Process Groups in Project Management	233
6.2.1	Project Initiating	233
6.2.2	Project Planning	235
6.2.3	Project Executing	238
6.2.4	Project Monitoring and Controlling	239
6.2.5	Project Closing	240
6.3	Work Breakdown Structure (WBS)	242
6.4	Design Proposals	245
6.5	Project Budgeting	245
6.6	Project Risk Plan, Assessment, and Management	248
6.7	Role of Project Manager and Team Management	253
6.8	Project Quality Management	257
	Bibliography	261
	Index	265