

CONTENTS

CHAPTER I - FUELING DEVELOPMENT	Page No
1.1 Introduction	1
1.2 History of Commercial Energy	1
1.3 World Energy Scene	3
1.4 The Present Study	8
1.5 Data Sources	9
 CHAPTER II - ENERGY ECONOMICS AND POLICY IN INDIAN ECONOMY	
2.1 Energy Economics and Policy in Perspective	12
2.2 Justification and Focus of this Study	17
2.3 Energy Constraints and Economic Development : A Resume	17
2.4 Energy Economic Issues and Economic Development/Growth	20
2.5 Indian Economy : A Structural View	23
2.6 The Energy Scene in India	27
2.7 Changes in the Pattern of Energy Supplies	31
2.7.1 Coal	31
2.7.2 Oil	32
2.7.3 Natural Gas	34
2.7.4 Electricity	34
2.8 Energy Consumption and Macro Economic Trends in India	36
2.8.1 Primary Energy Consumption	37
2.9 Debt Energy Nexus	41
2.10 Determining a Certain Economic Growth Rate with Minimum Consumption of Energy	44
2.10.1 Relationship Between Energy Consumption and Economic Growth	45
2.10.2 Energy Intensity	47
2.10.3 Lower Intensity of Energy and Oil	48
2.11 Industrial Restructuring	49
2.12 Summary	50
 CHAPTER III - ENERGY MODELING FOR ECONOMIC ANALYSIS AND DECISION MAKING	
3.1 Macro Modeling in General	53
3.1.1 Energy Modeling	54
3.1.2 Classification of Energy Models	55
3.2 Review of Energy Policy Planning and Modeling in India	59
3.3 Energy Studies by the Government of India	62
3.3.1 Energy Survey of India Committee (ESIC), 1963	62

3.3.2	Fuel Policy Committee (FPC), 1970	63
3.3.3	Working Group on Energy Policy (WGEP), 1949	63
3.3.4	Modeling Energy Demand for Policy Analysis (Parikh, 1981)	64
3.3.5	Advisory Board on Energy (ABE) 1987 : Towards a perspective on Energy Demand and Supply in India in 2004-2005	65
3.3.6	Perspective Planning and Policy for Commercial Energy (Sengupta, 1988, Planning Commission)	66
3.3.7	Energy Economy Simulation and Evaluation Model (TEESE, Model)	67
3.4	Energy Models and Management Science	67
3.5	EM as a Tool for Public Decision Making	71
3.5.1	Problems and Limitations of EM	72

CHAPTER IV - ENERGY MODELING IN INPUT-OUTPUT FRAMEWORK

4.0	Introduction	82
4.1	Development and Uses of I-O Tables in India	85
4.2	Input-Output Methodology followed in India	86
4.3	Leontief Interindustry Model	88
4.4.1	Traditional Economic Multipliers	91
4.4.2	Energy Multipliers	93
4.5	Remarks on Input Output Model for Energy Analysis	95
4.6	Input Output Analysis and Programming Technique	96
4.7	Interindustry Analysis and Linear Programming	96

CHAPTER V - MULTIPLIERS AND COEFFICIENTS : AN APPLICATION TO INDIAN ECONOMY

5.1	Input-Output Multipliers and coefficients	97
5.1.1	An Interpretation of Input-Output Coefficients and Multipliers	99
5.1.2	Comparison : Various Measurements Energy Intensities	104
5.2	Energy Intensive Industries	105
5.3.1	Consumption Demand for Capital Formation	114
5.3.2	Export and Imports	114
5.4	Energy Intensive Economic Growth !	117

CHAPTER VI - FORECAST OF ENERGY AND GROSS DOMESTIC PRODUCT

6.1	Demand Forecast	121
6.1.2	Approaches to Energy Forecasting	122
6.1.3	Energy Forecast and the I-O Model	125
6.1.4	Energy Units in I-O Table	127

6.2	Sectoral Growth Rates	128
6.2.1	Derivation of Final Demand and Gross Output	130
6.2.2	Energy Demand Scenario for Different Growth Rates	133
6.3	Input-Output and Linear Programming Model	143
6.4	Policy Implications	146
6.4.1	Achieving a certain Economic Growth Rate with Minimum Consumption of Supply	147
6.4.2	Relationship between Energy Demand/Supply and Economic Development/Growth	147
6.4.3	Lowering Energy Elasticity	149
6.5	Industrial Restructuring	151
6.6	Strategic Reserves	152

CHAPTER VII - SUMMARY AND CONCLUSION

7.1	Analysis of Policy Alternatives	154
7.2	Demand Side Energy Management	157
7.2.1	Reduction in Transmission and Distribution Losses	157
7.2.2	Plant Load Factor	158
7.2.3	Energy Pricing	158
7.3	Limitation of This Study	161