

CONTENTS

	Page
Acknowledgments	i
Contents	ii
List of Tables	iv
List of Figures	vi
Summary	vii
 1. Introduction	 1
 2. The Development of Energy Demand and Carbon Dioxide Emissions	 3
 3. Prospects for Future Emission Levels	 7
3.1 Overview	7
3.2 Projection Methods	8
3.3 Final Energy Demand	8
3.4 The Energy Conversion Sectors	9
3.5 Primary Energy Demand	10
3.6 Carbon Dioxide Emissions	11
3.7 The Plausibility of the Scenarios	12
3.8 An Emissions Standstill	12
3.9 Emission Cutbacks	12
 4. UK Energy Policy	 23
4.1 Introduction	23
4.2 Energy Supply in the UK	23
4.2.1 Coal	23
4.2.2 Oil	24
4.2.3 The Gas Industry	25
4.2.4 Non-Fossil Energy Sources	26
4.3 Domestic Energy Policy	27
4.4 European Community Energy Policy	29
 5. UK Environmental Policy and the Greenhouse Effect	 35
5.1 The Policy-Making Framework	35
5.2 Policy in the 1980s	36
5.3 Climate Change and the Changed Policy Climate	37
5.4 European Community Environment Policy	
- the Framework	38
5.5 Developments in Community Environment Policy	39

CONTENTS

	Page
6. The Scope For Policy Action	42
6.1 Overview	42
6.2 Energy Efficiency	42
6.2.1 Energy Efficiency in the Household Sector	42
6.2.2 Energy Efficiency in the Industrial Sector	44
6.2.3 Energy Efficiency in the Service Sector	45
6.2.4 Energy Efficiency in the Transport Sector	45
6.2.5 Energy Efficiency in Electricity Supply	47
6.2.6 Energy Efficiency Policies	47
6.3 Fossil Fuel Substitution	49
6.4 Nuclear Power	49
6.5 Renewable Energy	50
6.6 Carbon Taxes	50
 7. Conclusions	 60
7.1 Introduction	60
7.2 Policy Measures for CO ₂ Abatement	60
 Appendix - Energy Projection Methods	 62
A.1 Overview	62
A.2 Manufacturing Industry	62
A.3 Service Sector	63
A.4 Households	64
A.5 Transport	65
A.6 Electricity Supply	66

LIST OF TABLES

	Page
Table 2.1	Four Phases for the Development of UK CO ₂ Emissions 5
Table 2.2	UK Final Energy Demand by Fuel and Sector in 1988 5
Table 3.1	Carbon Dioxide Emission Factors 14
Table 3.2	Final Energy Demand by Sector - Business-as Usual Scenario 14
Table 3.3	Final Energy Demand by Sector - Efficiency Scenario 14
Table 3.4	Final Energy Demand - Business-as Usual Scenario 15
Table 3.5	Final Energy Demand - Efficiency Scenario 15
Table 3.6	Final Energy Demand - Substitution Scenario 15
Table 3.7	Installation of New Power Plant Capacity by Type 16
Table 3.8	UK Electricity Generation by Type - Business-as-Usual Scenario 17
Table 3.9	UK Electricity Generation by Type - Efficiency Scenario 17
Table 3.10	UK Electricity Generation by Type - Substitution Scenario 17
Table 3.11	Primary Energy Demand - Business-as Usual Scenario 18
Table 3.12	Primary Energy Demand - Efficiency Scenario 18
Table 3.13	Primary Energy Demand - Substitution Scenario 18
Table 3.14	Breakdown of CO ₂ Emissions in each Scenario by Fuel 19
Table 3.15	Sectoral Breakdown of CO ₂ Emissions in Each Scenario 19
Table 3.16	Projected Rates of Change of Energy Use and CO ₂ Emissions 20
Table 4.1	Production and Trade of Crude Oil 32
Table 4.2	EC 'Horizontal' Energy Policy Objectives 32
Table 4.3	EC Sectoral Energy Policy Objectives 33
Table 6.1	Heat Loss in the Housing Stock 52
Table 6.2	Energy Efficiency Measures in the Household Sector 53
Table 6.3	Ownership and Electricity Consumption of Major Appliances in 1987 54
Table 6.4	Energy Efficiency Measures in the Metals Industry 54
Table 6.5	Energy Efficiency Measures in the Services Sector 55
Table 6.6	Conservation Potential in the Service Sector 56
Table 6.7	Energy Efficiency Policy Measures 57

LIST OF TABLES

		Page
Table A.1	Economic Activity Assumptions	67
Table A.2	Sources of Final Energy Demand Estimates	67
Table A.3	Industrial Energy Use - Business-as Usual Scenario	68
Table A.4	Industrial Energy Use - Efficiency Scenario	68
Table A.5	Industrial Energy Use - Substitution Scenario	68
Table A.6	Service Sector Energy Use - Business-as Usual Scenario	69
Table A.7	Service Sector Energy Use - Efficiency Scenario	69
Table A.8	Household Energy Use - Business-as Usual Scenario	70
Table A.9	Household Energy Use - Efficiency Scenario	70
Table A.10	Household Energy Use - Substitution Scenario	70
Table A.11	Transport Energy Use - Business-as Usual Scenario	71
Table A.12	Transport Energy Use - Efficiency Scenario	71

LIST OF FIGURES

		Page
Figure 2.1	UK Carbon Dioxide Emission 1947-88	6
Figure 2.2	UK Primary Energy Demnd 1947-88	6
Figure 3.1	Projected Carbon Dioxide Emissions	21
Figure 3.2	Potential Contributions to Carbon Abatement	21
Figure 6.1	Estimated Resource Cost Curves for Renewable Electricity Sources in the UK	58