

## Contents

The author	5
Preface	7
Foreword	11
Introduction: The importance of fossil fuels for industrial societies	13
Part I • Nature and variety of fossil fuels, physico-chemical principles	
of their formation and that of their deposits in the earth's crust	19
Chapitre 1 • What are the fossil fuels, and what are they made of?	21
1.1 The oils	21
1.2 The natural gases	24
1.3 The coals	28
1.4 The bituminous shales (oil shales)	29
Chapitre 2 • How do fossil fuels form?	33
2.1 Their origin: kerogens, debris of organisms accumulated	
in certain sediments	33
2.2 Their sites of formation: sedimentary basins, depressions	
of the earth's crust invaded by the waters	38
2.3 The key to their formation: the thermal history	
of kerogen containing sediments	39

Chapitre 3 • How are their deposits formed?	49
3.1 Fluid fuels: oils and gases	49
3.2 Solid fuels: coals and bituminous (oil) shale	67
Chapitre 4 • An overview of fossil fuels	75
Part II • Future prospects, climate and health risks	81
Chapitre 1 • Some nomenclature	83
1.1. Natural conventional and unconventional oil and gas	05
and synthetic oil and gas (synfuels and syngases)	83
1.2 Categories of coals and their use	90
Chapitre 2 • Some Quantification	93
	))
2.1 To what depths are deposits of fossil fuels found?	93
2.2 The caloffic value of fuels, the source of their	96
Chapitre 3 • Future prospects of fossil fuels?	101
3.1. A very difficult problem: the evaluation of fossil fuel reserves	101
3.2 What is the future of global fossil fuel production?	116
Chapitre 4 • A little Economics: fossil fuel prices	153
4.1 Oil prices	153
4.2 Gas prices	160
4.3 Coal prices	161
4.4 Trends in market shares of primary energies	162
Chapitre 5 • Fossil fuels and climate	167
Chapitre 6 • Fossil fuels and public health	175
Conclusion	177
Appendix 1: Chemical composition of oils	185
Appendix 2: Dynamics and Resilience of the Production of Shale	
Oil and Gas	189
References	193