

Contents

1	Introduction	1
1.1	Integrated Assessment Model of Climate Change and Economy	1
1.2	The Classification of IAM	2
1.3	IAM Modeling Principle	7
1.4	Global Carbon Cycle Model	13
1.5	Shortcomings	16
	References	18
2	MRICES	21
2.1	Introduction	21
2.2	Model Description	23
2.2.1	Economic System	23
2.2.2	Emissions Mitigation	25
2.2.3	GDP Spillovers	27
2.3	Parameter Estimation	29
2.4	Assessment of Emissions Mitigation Strategies	30
2.4.1	Egalitarian Allocation of Emissions Quotas	30
2.4.2	UNDP Strategy	34
2.4.3	Copenhagen Accord	36
2.4.4	A Strategy to Achieve the 2 °C Target	37
2.5	Conclusions and Discussion	38
	Appendix A	38
	References	40
3	The Impact of Sea Level Rise	43
3.1	Introduction	43
3.2	Model and Data	44
3.3	A Group Reduce Emissions Scheme Setting	47

3.4	Result	48
3.4.1	The Temperature	49
3.4.2	The Sea Level	49
3.4.3	The Economic Loss of Sea Level Rise	50
3.5	The Flood Area in China	55
3.6	Discussion	56
	References.	57
4	EMRICES	59
4.1	Introduction	59
4.2	Analysis Framework	60
4.2.1	The Model	60
4.2.2	The Situation of Global Carbon Mitigation	61
4.2.3	Global Mitigation Principles	62
4.3	The Game Design and Simulation	62
4.3.1	Welfare	62
4.3.2	The Mitigation Strategy	63
4.3.3	The Solution of the Nash Equilibrium.	64
4.3.4	The Mitigation Scheme	64
4.4	Sensitivity Analysis	67
4.4.1	The Nash Equilibrium	67
4.4.2	The Pareto Principle	68
4.5	The Conclusion	70
	References.	71
5	The Analysis for Synergistic Effect of Policy of Environmental Tax with Dynamic CGE in China	73
5.1	Introduction	73
5.2	Model and Data	75
5.2.1	CGE Dynamic Mechanism	75
5.2.2	Data	76
5.3	Results Analysis	77
5.3.1	Baseline Scenario	77
5.3.2	Sulfur Tax Scenario	78
5.3.3	Carbon Tax Scenario	80
5.3.4	Sulfur Tax and Carbon Tax Scenario	84
5.4	Conclusions	86
	References.	87
6	CIECIA	89
6.1	Introduction	89
6.2	Model and Data Sources.	91
6.2.1	Economic Module.	91
6.2.2	Climate Module	94

6.2.3	Technological Progress	95
6.2.4	Data Sources	96
6.3	Calibration	97
6.4	Assessments of Global Cooperating Abatement Schemes	99
6.4.1	The Non-Abatement Scheme	101
6.4.2	Stern Scheme	103
6.4.3	Norhaus Scheme	105
6.4.4	Principle of Convergence on Carbon Emissions Per Capita	108
6.4.5	Principle of Convergence on Accumulated Carbon Emissions Per Capita	111
6.4.6	Global Economic Growth Scheme	117
6.4.7	Pareto Improvement Scheme	119
6.5	Conclusions	124
	Appendix A. Main Parameters	125
	Appendix B. Changes of Industrial Structure of Countries	127
	Appendix C. A New Pareto Improvement Scheme	130
	References	133
7	Carbon Emission Governance Under Global Carbon Taxes	137
7.1	Introduction	137
7.2	Model and Data Sources	139
7.2.1	Production Module	139
7.2.2	Knowledge Capital and Process Technological Progress	141
7.2.3	Carbon Emission Accounting and Carbon Tax levy	142
7.2.4	Carbon Tax Revenue Distribution	145
7.2.5	Data Sources	147
7.3	Simulations of Different Carbon Tax Rates	147
7.4	Simulations of Different Distribution Modes of Carbon Tax Revenue	153
7.5	Impacts of Technological Progress Strategy in Carbon Tax Policy	157
7.6	Conclusions	160
	References	161
8	Global Climate Ethics: A View Based on Chinese Philosophy	165
8.1	Introduction	165
8.2	The Significance of the Climate Ethics	166
8.2.1	A New Perspective of Climate Ethics	168

8.3	Basic Issues of Climate Ethics	171
8.3.1	The Equity Principle of Climate Ethics	171
8.3.2	Justice and Responsibility	173
8.4	Justice of the Climate Negotiations.	178
8.5	Conclusion	179
	References.	180

Integrated Assessment Models of Climate Change
Economics

Wang, Z.; Wu, J.; Liu, C.; Gu, G.

2017, X, 181 p. 59 illus., 40 illus. in color., Hardcover

ISBN: 978-981-10-3943-0