

Contents

<i>List of Figures</i>	<i>page</i> xiii
<i>List of Tables</i>	xv
<i>List of Contributors</i>	xvi
<i>Acknowledgments</i>	xxix
<b>1 Introduction</b>	<b>1</b>
Marc Ozawa, Jonathan Chaplin, Michael Pollitt, David Reiner, and Paul Warde	
1.1 Why Do We Need a Multidisciplinary Social Science– and Humanities–Based Approach to Energy Policy?	4
1.2 Multidisciplinary Approaches to Energy Policy	7
1.3 Examples of Different Disciplinary Approaches in Social Sciences and Humanities	9
1.4 Book Structure	10
1.5 Highlights and Key Lessons	11
<b>PART I MULTIDISCIPLINARY PERSPECTIVES</b>	<b>23</b>
<b>2 Political Science and Energy</b>	<b>25</b>
David M. Reiner	
2.1 Introduction	25
2.2 Energy and the Political Science Literature	26
2.3 Energy and Political Subfields	27
2.4 Areas of Future Growth: Putting Energy into Environmental and Climate Politics	29
2.5 References	31

<b>3</b>	<b>Economics – The Proper Valuation of Security and Environment</b>	<b>32</b>
	David Newbery	
3.1	Introduction	32
3.2	The Role and Limitations of Competitive Markets	33
3.3	Market Completeness and Missing Markets	35
3.4	Climate Change Mitigation	37
3.5	Security	41
3.6	Conclusions	42
3.7	References	42
<b>4</b>	<b>Good Energy: Philosophical Perspectives</b>	<b>45</b>
	Tim Lewens	
4.1	Good Outcomes and Good Processes	45
4.2	Good Outcomes	46
4.2.1	Energy Justice	46
4.2.2	Future Generations	47
4.2.3	Non-identity	47
4.2.4	Comparing Consequences	48
4.3	Good Processes	49
4.3.1	The Role of Experts	49
4.3.2	Inductive Risk	50
4.3.3	Participation	52
4.3.4	Precaution	54
4.4	Conclusions: Science, Policy and Process	56
<b>5</b>	<b>Public Theology – ‘Grounded’: An Energy Policy Rooted in Human Flourishing</b>	<b>57</b>
	Jonathan Chaplin	
5.1	The Nature of ‘Public Theology’	57
5.2	Environmental Public Theology	58
5.3	Public Theology and ‘Good’ Energy Policy	64
5.4	Conclusions: From Theology to Action	66
5.5	References	67
<b>6</b>	<b>Anthropology and Energy Policy</b>	<b>69</b>
	Charlotte Johnson	
6.1	Interests	69
6.1.1	Anthropology of the State	70
6.1.2	Economic Anthropology	70
6.1.3	Material Culture of the Home and Consumption	71
6.1.4	Digital Anthropology	72
6.2	Approaches	72
6.3	Collaborations	73
6.4	References	74

	<i>Contents</i>	vii
7	<b>History: A Long View?</b> Paul Warde	76
8	<b>Management – From the Drawing Board to Successful Delivery</b> Jim Platts	82
	8.1 Embodying Wisdom	83
	8.2 Developing an Industry	84
	8.3 Developing New Infrastructure	85
	8.4 Insightful Leadership Identifies the Risks and Removes Them	85
	8.5 Developing Bigger Wind Turbines	86
	8.6 Making It Happen	87
9	<b>Legal Aspects of Energy Policy</b> Tibisay Morgandi and Jorge E. Viñuales	89
	9.1 Introduction	89
	9.2 Extraction of Shale Gas in the European Union	90
	9.3 Low-Carbon Policies in the United States	93
	9.4 Renewable Energy Support in India	95
	9.5 Legal Aspects of ‘Good’ Energy Policy	96
	<b>PART II CASES AND MULTIDISCIPLINARY RESPONSES</b>	99
10	<b>The Ethics of Nuclear Energy: Its Past, Present and Future</b> Behnam Taebi and Sabine Roeser	101
	10.1 Introduction	101
	10.2 The Ethics of Nuclear Energy: Where We Come From	103
	10.3 New Nuclear Technology: Old and New Challenges	104
	10.4 Multinational Nuclear Waste Disposal and Problems of Justice	106
	10.5 The Need for Global Governance of Nuclear Energy	108
	10.6 Nuclear Risk, Values and Emotions	109
	10.7 Conclusions	112
	10.8 References	113
	10.9 Response to ‘The Ethics of Nuclear Energy – Its Past, Present and Future’ Alexandra C. H. Skelton	116
	10.9.1 References	119
11	<b>Fukushima and German Energy Policy 2005–2015/2016</b> Christian Growitsch and Felix Höffler	120
	11.1 The Immediate Effect of Fukushima	120
	11.1.1 The Political Consequences	120
	11.1.2 Short-Term Market and Quantity Reactions	121

11.2	Long-Term Effects of the Accelerated Phase-Out	127
11.3	Some Tentative Interpretations	132
11.4	Response to 'Fukushima and German Energy Policy 2005–2015/2016'	136
	Marc Ozawa	
<b>12</b>	<b>Rethinking the Environmental State: An Economic History of the Swedish Environmental Kuznets Curve for Carbon</b>	<b>139</b>
	Magnus Lindmark	
12.1	Introduction	139
12.2	The Oil Crises and the Development of Carbon Emissions	140
12.3	Why the Oil Intensity Was So High in 1973	144
12.4	The Role of Taxes and Subsidies	147
12.5	Energy and the 'Third Way' Economic Policy	149
12.6	From Three Mile Island to the Carbon Ceiling and Beyond	153
12.7	Conclusions	156
12.8	References	158
	12.8.1 Official Publications	158
	12.8.2 Online Resources	159
	12.8.3 Newspaper Articles	159
	12.8.4 Literature	159
12.9	Response to 'Rethinking the Environmental State: An Economic History of the Swedish Environmental Kuznets Curve for Carbon'	162
	Michael G. Pollitt	
	12.9.1 References	164
<b>13</b>	<b>Fossil Fuel Systems to 100 Per Cent Renewable Energy-Based Smart Energy Systems: Lessons from the Case of Denmark, 1973–2017</b>	<b>165</b>
	Frede Hvelplund, Søren Djørup and Karl Sperling	
13.1	Introduction	165
13.2	The Social Anthropological GOING CLOSE Approach	168
13.3	What Can We Learn from the 1975–2017 History of the Danish Energy Sector?	169
	13.3.1 From 1975 to 2001	169
	13.3.2 From 2001 to 2017	170
13.4	The Development and Implementation of Integrated Smart Energy Systems	172
	13.4.1 The Smart Energy System Scenario	172
	13.4.2 The Transmission System Scenario	173
13.5	The Ownership Discussion and the Transition to Smart Energy Systems	173
13.6	The Coordination of Smart Energy Systems versus the Coordination of the Transmission Line Paradigm	176

*Contents*

ix

13.6.1	Will Smart Energy Systems Be Able to Politically and Economically Compete with the Transmission Line Paradigm under the Present Institutional Regime?	176
13.6.2	If the Conditions for Smart Energy Systems Improve, Will These Systems Be Consumer- or Municipality-Owned?	178
13.7	Policy Suggestions	179
13.8	Conclusions	180
13.9	Comments on Danish Heating Policies since 1950: A Social Science Perspective on Danish Heat Systems Paul Warde	184
14	<b>The Politics of Carbon Capture and Storage: How Interests Have Outstripped Economics in Shaping the Evolution of a Technology</b> David M. Reiner	187
14.1	Introduction	187
14.2	A Pre-History of CCS: The Analysts' (and Stakeholder?) Favourite	189
14.3	A Brief Golden Era of CCS (2003–2009)	192
14.4	Moving beyond Rhetorical Support (2009–): A More Sceptical View of Interests	194
14.4.1	Government	194
14.4.2	Energy Industry	195
14.4.3	NGOs	196
14.5	Conclusions: Why Have the Politics of CCS Been So Difficult?	197
14.6	Response to 'The Politics of Carbon Capture and Storage: How Interests Have Outstripped Economics in Shaping the Evolution of a Technology' Jim Platts	200
15	<b>Scaling Clean Energy for Data Centres: Trends, Problems, Solutions</b> Atif Ansar, Dan Madrigal and Seth Collins	202
15.1	Introduction	202
15.2	Energy Use in Data Centres	204
15.2.1	Utilisation	204
15.2.2	Virtualisation	205
15.3	Facility Types and Energy Consequences	205
15.4	Metrics and Measurement	205
15.5	Twin Solutions: Energy Efficiency and Renewable Generation	207
15.5.1	The Case for Efficiency	207
15.5.2	Efficiency Gains in Cooling Technologies	207
15.5.3	PUE Innovation	208
15.5.4	The Case for Renewable Power in Data Centres	209

15.6	Data Centre Siting	210
15.6.1	The Opportunity of Site Selection	211
15.6.2	Limitations to Siting	214
15.6.3	Conflict and Change: Grid Interface and Policy Influence	214
15.7	Achieving Scale	215
15.8	References	218
15.9	Response to ‘Scaling Clean Energy for Data Centres’ – A History and Policy Perspective Tae Hoon Kim	221
16	<b>Public Participation in the Context of Energy Activities: The Role of the Aarhus Convention Compliance Committee</b> Leslie-Anne Duvic-Paoli	224
16.1	Introduction	224
16.2	The Aarhus Convention, An Instrument of Energy Governance	225
16.3	The Aarhus Compliance Committee and Its Case Law on Energy	228
16.3.1	Case Study 1 – Construction of a Nuclear Power Station	228
16.3.2	Case Study 2 – Design of a Renewable Energy Policy	229
16.3.3	Assessment	230
16.4	International Law and the Democratisation of Energy Policies	232
16.5	Conclusions	234
16.6	Response to ‘Public Participation in the Context of Energy Activities: The Role of the Aarhus Convention Compliance Committee’ David Newbery	234
16.6.1	References	236
17	<b>Biofuel Energy, Ancestral Time and the Destruction of Borneo: An Ethical Perspective</b> Michael S. Northcott	237
17.1	Bibliography	249
17.2	Works Cited	251
17.3	Response to ‘Biofuel Energy, Ancestral Time and the Destruction of Borneo: An Ethical Perspective’ David Reiner	254
17.3.1	References	256
18	<b>From Inspiration to Implementation: <i>Laudato Si’</i>, Public Theology and the Demands of Energy Policy</b> Jonathan Chaplin	257
18.1	Introduction	257

Contents		xi
18.2	<i>Laudato Si'</i> on the Ecological Crisis	258
18.3	A Theology of Interconnectedness	259
18.4	Ecological Crisis and Societal Structure: 'Integral Ecology'	260
18.5	Minding the Gap: Technology, the Market and the State	261
18.5.1	Technology	261
18.5.2	The Market	262
18.5.3	The State	265
18.5.4	Challenges Ahead	267
18.6	References	269
18.7	Response to 'From Inspiration to Implementation: <i>Laudato Si'</i> , Public Theology and the Demands of Energy Policy' Vladimir Kmec	270
<b>PART III MULTIDISCIPLINARY CASES</b>		273
19	<b>Introduction to Multidisciplinary Approaches</b> Marc Ozawa and Michael Pollitt	275
19.1	Two Teams, Two Universities and Two Countries	277
19.2	Five Disciplines across One University	279
20	<b>A Comparative Study of Air Pollution Trends in Historical London and Contemporary Beijing</b> Jacqueline CK Lam, Yang Han, Shanshan Wang, Victor OK Li, Michael Pollitt and Paul Warde	282
20.1	Introduction	282
20.2	London 1950–1966	283
20.2.1	Air Pollution Trends 1950–1966	283
20.2.2	Socio-economic and Energy Landscape	284
20.2.3	Regulatory and Policy Landscape	285
20.3	Beijing 2000–2016	288
20.3.1	Air Pollution Trends 2000–2016	288
20.3.2	Socio-economic, Energy and Transport Landscape	290
20.3.3	Regulatory and Policy Landscape	292
20.4	Comparing the Air Pollution Trends and the Socio-economic and Regulatory Landscape in Historical London and Contemporary Beijing	297
20.5	Conclusions and Policy Implications	299
20.6	References	300
21	<b>The Power of Siberia: A Eurasian Pipeline Policy 'Good' for Whom?</b> Marc Ozawa, Chi Kong Chyong, Kun-Chin Lin, Tim Reilly, Caroline Humphrey and Corine Wood-Donnelly	305
21.1	Introduction	305

xii	<i>Contents</i>	
21.2	Geopolitical Considerations	309
21.3	Regional Geopolitical Considerations, Russia and Europe	311
21.3.1	Regional Geopolitical Considerations for China	313
21.4	Economic Considerations and the Valuation of the Power of Siberia Gas Pipeline – Gazprom and Russian Perspectives	315
21.4.1	Benefits to Gazprom as a Supplier to China through Power of Siberia	315
21.4.2	Wider Benefits to Russia	318
21.5	Considerations for China as a Demand Market for Power of Siberia	320
21.6	Legal and International Institutional Dimensions	323
21.7	Environmental and Social Factors	326
21.7.1	Responses from Local and Indigenous Communities	327
21.7.2	Environment	329
21.8	Conclusions	330
21.9	References	331
22	<b>Responses and Final Thoughts</b>	
	Emily Shuckburgh, John Deutch, Ronald Oxburgh, Marc Ozawa, Jonathan Chaplin, Michael Pollitt, David Reiner and Paul Warde	336
22.1	‘Multicultural’ Policy: Integrating Expertise from a Span of Disciplines to Inform Policy	336
22.1.1	References	338
22.2	Crossing the Chasm to ‘Good’ Global Climate Policy	339
22.3	Climate Change – Will China Save the Planet?	340
22.4	Response from the Editors, Marc Ozawa, Jonathan Chaplin, Michael Pollitt, David Reiner and Paul Warde	343
22.4.1	General Lessons From the Editors	345
22.4.2	Editors – Future Multidisciplinary Research on Energy Policy and Final Thoughts	346
22.4.3	Editors’ response references	350
	<i>Index</i>	351