

Contents

<i>List of contributors</i>	vii
<i>Foreword by John R. Ehrenfeld</i>	xvii
<i>Acknowledgments</i>	xxi
<i>List of abbreviations</i>	xxii

PART I CONCEPTS AND METHODS

1 The dynamics of regions and networks in industrial ecosystems: background and concepts <i>Matthias Ruth and Brynhildur Davidsdottir</i>	3
2 Dynamics of geographically based industrial ecosystems <i>Marian R. Chertow</i>	6

PART II REGIONAL DYNAMICS AND INDUSTRIAL ECOSYSTEMS

3 Regional dynamics and industrial ecosystems: an introduction <i>David L. Rigby</i>	31
4 Spatial and temporal life cycle assessment: ozone formation potential from natural gas use in a typical residential building in Pittsburgh, USA <i>Shannon M. Lloyd and Robert Ries</i>	38
5 Estimating generalized regional input–output systems: a case study of Australia <i>Blanca Gallego and Manfred Lenzen</i>	55
6 The economic and environmental consequences of reduced air transport services in Pennsylvania: a regional input–output life cycle assessment case study <i>Gyorgyi Cicas, Chris T. Hendrickson and H. Scott Matthews</i>	83
7 Design approach frameworks, regional metabolism and scenarios for sustainability <i>Tim Baynes, Jim West and Graham M. Turner</i>	97

PART III EVOLUTION OF NETWORKS IN INDUSTRIAL ECOLOGY		
8	Learning and evolution in industrial ecosystems: an introduction <i>Peter M. Allen</i>	121
9	A framework for analysis of industrial networks <i>Ruud Kempener, Brett Cohen, Lauren Basson and Jim Petrie</i>	128
10	Understanding and shaping the evolution of sustainable large-scale socio-technical systems <i>Igor Nikolic, Gerard P.J. Dijkema and Koen H. van Dam</i>	156
11	Futures scenarios of industrial ecosystems: a research design for transportation planning <i>Paul Beavis, John A. Black, James Lennox, Graham M. Turner and Stephen J. Moore</i>	179
12	PowerPlay: developing strategies to promote energy efficiency <i>Matthias Ruth, Clark Bernier, Alan Meier and John 'Skip' Laitner</i>	201
13	The dynamics of regions and networks in industrial ecosystems: retrospect and prospect <i>Brynhildur Davidsdottir and Matthias Ruth</i>	224
	<i>Index</i>	233