

Robert M. Scheller

Managing Landscapes for Change

This book discusses how future landscapes will be shaped by pervasive change and where, when, and how society should manage landscapes for change. Readers will learn about the major anthropogenic drivers of landscape change, including climate change and human induced disturbance regimes, and the unique consequences that multiple and simultaneously occurring change agents can have on landscapes. The author uses landscape trajectories as a guide to selecting the appropriate course of action, and considers how landscape position, inertia, and direction will determine landscape futures. The author introduces the concept of landscapes as socio-technical-ecological systems (STES), which combines ecological and technological influences on future landscape change and the need for society to acknowledge both when considering landscape management. Thinking beyond solutions, the author identifies barriers to managing landscapes for change including the cost, cultural identity of local populations, and the fear of taking action under uncertain conditions. Nevertheless, processes, tools, and technologies exist for overcoming social and ecological barriers to managing landscapes for change, and continued investment in social and scientific infrastructure holds out hope for maintaining our landscape values even as we enter an era of unprecedented change and disruption.

ISBN 978-3-030-62040-0



9 783030 620400



1	Introduction	1
	Reference	8
2	What Is a Landscape?	9
	References	17
3	Drivers of Landscape Change	19
	3.1 Consequences for Landscape Values	22
	3.2 Deviation from Baseline	25
	3.3 Interactions Among Drivers	29
	References	31
4	Landscape Trajectories	35
	4.1 Landscape Position	39
	4.2 Landscape Direction	41
	4.3 Landscape Inertia	42
	4.4 Example: The New Jersey Pine Barrens	43
	4.5 Can We Intentionally Shape Landscape Trajectories? Humans as Active Change Agents	45
	References	47
5	Options for Managing Landscape for Change	51
	5.1 Persistence	51
	5.2 Transformation	58
	5.3 Decline	60
	5.4 Conclusion	62
	References	62
6	Barriers to Managing for Change	67
	6.1 Abiotic and Ecological Barriers to Change	67
	6.2 Cultural and Institutional Barriers to Change	68
	6.3 Financial Barriers	72
	6.4 Uncertainty	73

6.5	Conclusion	76
	References.....	76
7	Social and Institutional Innovations	79
7.1	Institutional Innovations	81
7.2	Cultural Norms and Innovation	83
7.3	Policy and Innovation	84
7.4	Synthesis	85
	References.....	86
8	Technologies for Innovating Forward	89
8.1	Data Science.....	89
8.2	Landscape Forecasting.....	90
8.3	Uncertainty and Scenarios	93
8.4	Ancillary Technologies	97
	References.....	98
9	Conclusions and Recommendations	101
	References.....	103
	Index	105