## **Contents**

1	1 Origin and Design of This Book							
2	The Scientific Sustainability Approach							
	2.1	Transdisciplinarity						
	2.2	Human Ecology						
	2.3	Systems Sciences						
	2.4	nable Development	13					
		2.4.1	Levels, Types and Principles of Sustainable					
			Development	13				
		2.4.2	Ecological Aspects	17				
		2.4.3	Economic Aspects	19				
		2.4.4	Societal, Ethical, Psychological, Political, and					
			Technological Aspects	21				
	2.5	Concl	usion: Sustainability as Schrödinger's Cat	23				
	Refe	References						
3	Automotive Plastics and Sustainability							
	3.1	Plastic	CS	29				
		3.1.1	Definition and Development of Plastics	29				
		3.1.2	The Life-Cycle of Plastics	36				
		3.1.3	Environmental and Social Impact of Plastics	40				
		3.1.4	Waste Treatment Technologies for (Automotive)					
			Plastics	45				
		3.1.5	Environmentally Sound Solution: Circular					
			Life-Cycle of Plastics	51				
		3.1.6	Plastics Are a Blessing and a Curse - A Summary	54				
	3.2	notive Plastics	55					
		3.2.1	Automotive and Automotive Plastic Trends	55				
		3.2.2	Environmental Impact of Automotive Plastics					
			and Cars in General	59				
		3.2.3	The Car Life-Cycle, ELV Management, and Recycling	61				

xiv Contents

	3.3 Refe		ary: Holistic Controversy of Automotive Plastics	69 71				
4	What Do the Experts Say? The Survey Results About							
	Automotive Plastics and Recycling							
	4.1	Valida	tion of Survey Data Through Expert Workshop	80				
	4.2		graphic Data and Details About the Survey Participants	81				
	4.3	Autom	notive Plastics Recycling and Recycled Plastics	84				
	4.4	Specia	l Information from the Survey Groups	93				
		4.4.1	The Survey-Automotive Group	93				
		4.4.2	The Survey-Recycling Group	98				
		4.4.3	The Survey - Plastics Group	102				
	4.5	The S	urvey Results in a Nutshell	108				
	Refe	rences		109				
5	A SCOT Analysis, Future Perspectives and Scenarios							
	on Recycling							
		-	~ 	123				
6	The Recycling Renaissance: Solutions and Practical Tools							
	to Advance Automotive Recycling							
	6.1		dmap to Circular Plastics for Companies	126				
		6.1.1	Step 1: Incorporate Sustainability and Circular					
			Economy in the Company Strategy	126				
		6.1.2	Step 2: Implement Sustainability-Oriented Innovation	120				
		(12	(SOI)	128				
		6.1.3	Step 3: Use Tools and Practical Methods to Achieve	121				
		(14	Circular Plastics	131 137				
	60	6.1.4	Step 4: Start with Pilot Actions	143				
	6.2		ons for Politics and Independent Institutions	143				
				144				
7			nability Illusion Versus the Recycling	1.45				
			e - A Discussion	147				
	7.1 7.2		's Illusion: True Sustainability	147				
			nability	156				
	7.3	A Cal	1 to Action: Things to Be Investigated	161				
	Refe	erences		163				
8	Why Automotive Recycling is an Opportunity - An Executive							
		•		167				
	Ref	erences	•••••	172				
Aj	Appendix							
G	ossaı	v		177				