Contents

Introduction	6	Assessment of the economic advantages	58
		Tasks and objectives as seen by the stakeholders	58
Principles	8	Life cycle costing	58
		Determination of construction costs	64
Sustainability as an objective and general framework	8	Determination of operating costs	66
New spatial system boundaries: metabolism		Accounting for externalities	70
of the human living space	11	Assessment of economic efficiency	70
New temporal system boundaries: from cradle			
to grave	13		
Stakeholders and points of view	13	Tools for integrated design	78
Uncertainty about the course of the life cycle	15		
		Integrated design	78
		Principles and tools	80
Design in the life cycle of buildings	18	Data models, data interchange and data maintenance	89
		Contribution of standardisation	92
The iterative nature of design	18	Sustainability certification of buildings	96
Life cycle-oriented design	18	,	
Life cycle-oriented building description	19		
Life cycle phase 1: New build	21	Life cycle analysis in practice:	
Life cycle phase 2: Use	25	Examples and areas of application	104
Life cycle phase 3: Refurbishment/renovation	27		
Life cycle phase 4: Deconstruction	28	Working methodology	104
Aging and loss of value	29	Example 1: Heinrich Böll Siedlung, Berlin	107
Estimated service life of buildings	34	Example 2: Normand Barracks, Speyer	110
Normative terms of service life	36	Example 3: Lebenshilfe, Lindenberg im Allgäu	115
		Example 4: Nirosan Production Hall, Schmiedefeld	120
		Example 5: Barnim Administration Centre, Eberswalde	124
Life cycle assessment	38	Extended consideration of buildings	128
Balling and a service of the service			
Method of life cycle assessment	38		
Life cycle assessments of buildings	48	Summary and outlook	138
Construction materials and processes	52		
Data in Ökobau,dat	57		
		Appendix	140
		. 1-1	