

# Contents

## Part I Introduction

<b>1</b>	<b>About This Book</b> . . . . .	<b>3</b>
	Michael Z. Hauschild, Ralph K. Rosenbaum and Stig Irving Olsen	
<b>2</b>	<b>Main Characteristics of LCA</b> . . . . .	<b>9</b>
	Anders Bjørn, Mikołaj Owsianiak, Christine Molin and Alexis Laurent	
<b>3</b>	<b>LCA History</b> . . . . .	<b>17</b>
	Anders Bjørn, Mikołaj Owsianiak, Christine Molin and Michael Z. Hauschild	
<b>4</b>	<b>LCA Applications</b> . . . . .	<b>31</b>
	Mikołaj Owsianiak, Anders Bjørn, Alexis Laurent, Christine Molin and Morten W. Ryberg	
<b>5</b>	<b>LCA and Sustainability</b> . . . . .	<b>43</b>
	Andreas Moltesen and Anders Bjørn	

## Part II Methodology

<b>6</b>	<b>Introduction to LCA Methodology</b> . . . . .	<b>59</b>
	Michael Z. Hauschild	
<b>7</b>	<b>Goal Definition</b> . . . . .	<b>67</b>
	Anders Bjørn, Alexis Laurent, Mikołaj Owsianiak and Stig Irving Olsen	
<b>8</b>	<b>Scope Definition</b> . . . . .	<b>75</b>
	Anders Bjørn, Mikołaj Owsianiak, Alexis Laurent, Stig Irving Olsen, Andrea Corona and Michael Z. Hauschild	

<b>9</b>	<b>Life Cycle Inventory Analysis</b> . . . . .	117
	Anders Bjørn, Andreas Moltesen, Alexis Laurent, Mikołaj Owsianiak, Andrea Corona, Morten Birkved and Michael Z. Hauschild	
<b>10</b>	<b>Life Cycle Impact Assessment</b> . . . . .	167
	Ralph K. Rosenbaum, Michael Z. Hauschild, Anne-Marie Boulay, Peter Fantke, Alexis Laurent, Montserrat Núñez and Marisa Vieira	
<b>11</b>	<b>Uncertainty Management and Sensitivity Analysis</b> . . . . .	271
	Ralph K. Rosenbaum, Stylianos Georgiadis and Peter Fantke	
<b>12</b>	<b>Life Cycle Interpretation</b> . . . . .	323
	Michael Z. Hauschild, Alexandra Bonou and Stig Irving Olsen	
<b>13</b>	<b>Critical Review</b> . . . . .	335
	Ralph K. Rosenbaum and Stig Irving Olsen	
<b>14</b>	<b>Use of Input–Output Analysis in LCA</b> . . . . .	349
	Tuomas J. Mattila	
<b>15</b>	<b>Life Cycle Costing: An Introduction</b> . . . . .	373
	Jan-Markus Rödger, Louise Laumann Kjær and Aris Pagoropoulos	
<b>16</b>	<b>Social Life Cycle Assessment: An Introduction</b> . . . . .	401
	Andreas Moltesen, Alexandra Bonou, Arne Wangel and Kossara Petrova Bozhilova-Kisheva	
<b>Part III Applications</b>		
<b>17</b>	<b>Introduction to Part III: Application of LCA in Practice</b> . . . . .	425
	Ralph K. Rosenbaum	
<b>18</b>	<b>Life Cycle Thinking and the Use of LCA in Policies Around the World</b> . . . . .	429
	G. Sonnemann, E.D. Gemechu, S. Sala, E.M. Schau, K. Allacker, R. Pant, N. Adibi and S. Valdivia	
<b>19</b>	<b>Globalisation and Mainstreaming of LCA</b> . . . . .	465
	Arne Wangel	
<b>20</b>	<b>Organisational LCA</b> . . . . .	481
	Julia Martínez-Blanco and Matthias Finkbeiner	
<b>21</b>	<b>Future-Oriented LCA</b> . . . . .	499
	Stig Irving Olsen, Mads Borup and Per Dannemand Andersen	
<b>22</b>	<b>Life Cycle Management</b> . . . . .	519
	Niki Bey	
<b>23</b>	<b>Ecodesign Implementation and LCA</b> . . . . .	545
	Tim C. McAloone and Daniela C.A. Pigosso	

<b>24</b>	<b>Environmental Labels and Declarations</b> . . . . .	<b>577</b>
	Jeppe Frydendal, Lisbeth Engel Hansen and Alexandra Bonou	
<b>25</b>	<b>Cradle to Cradle and LCA</b> . . . . .	<b>605</b>
	Anders Bjørn and Michael Z. Hauschild	
<b>26</b>	<b>LCA of Energy Systems</b> . . . . .	<b>633</b>
	Alexis Laurent, Nieves Espinosa and Michael Z. Hauschild	
<b>27</b>	<b>LCA of Electromobility</b> . . . . .	<b>669</b>
	Felipe Cerdas, Patricia Egede and Christoph Herrmann	
<b>28</b>	<b>LCA of Buildings and the Built Environment</b> . . . . .	<b>695</b>
	Benjamin Goldstein and Freja Nygaard Rasmussen	
<b>29</b>	<b>LCA of Food and Agriculture</b> . . . . .	<b>723</b>
	Teunis J. Dijkman, Claudine Basset-Mens, Assumpció Antón and Montserrat Núñez	
<b>30</b>	<b>LCA of Biofuels and Biomaterials</b> . . . . .	<b>755</b>
	Susanne Vedel Hjuler and Sune Balle Hansen	
<b>31</b>	<b>LCA of Chemicals and Chemical Products</b> . . . . .	<b>783</b>
	Peter Fantke and Alexi Ernstoff	
<b>32</b>	<b>LCA of Nanomaterials</b> . . . . .	<b>817</b>
	Mirko Miseljic and Stig Irving Olsen	
<b>33</b>	<b>LCA of Drinking Water Supply</b> . . . . .	<b>835</b>
	Berit Godskesen, Noa Meron and Martin Rygaard	
<b>34</b>	<b>LCA of Wastewater Treatment</b> . . . . .	<b>861</b>
	Henrik Fred Larsen	
<b>35</b>	<b>LCA of Solid Waste Management Systems</b> . . . . .	<b>887</b>
	Ioannis Bakas, Alexis Laurent, Julie Clavreul, Anna Bernstad Saraiva, Monia Niero, Emmanuel Gentil and Michael Z. Hauschild	
<b>36</b>	<b>LCA of Soil and Groundwater Remediation</b> . . . . .	<b>927</b>
	Gitte Lemming Søndergaard and Mikołaj Owsianiak	
<b>Part IV LCA Cookbook</b>		
<b>37</b>	<b>LCA Cookbook</b> . . . . .	<b>963</b>
	Michael Z. Hauschild and Anders Bjørn	
<b>Part V Annexes</b>		
<b>38</b>	<b>Report Template</b> . . . . .	<b>1051</b>
	Anders Bjørn, Alexis Laurent and Mikołaj Owsianiak	

<b>39 Illustrative Case Study: Life Cycle Assessment of Four Window Alternatives</b> . . . . .	1059
Mikołaj Owsianiak, Anders Bjørn, Heidi B. Bugge, Sónia M. Carvalho, Leise Jebahar, Jon Rasmussen, Caroline M. White and Stig Irving Olsen	
<b>40 Overview of Existing LCIA Methods—Annex to Chapter 10</b> . . . . .	1147
Ralph K. Rosenbaum	
<b>Glossary</b> . . . . .	1185
<b>Index</b> . . . . .	1199

Life Cycle Assessment

Theory and Practice

Hauschild, M.; Rosenbaum, R.K.; Olsen, S. (Eds.)

2018, XX, 1216 p. 223 illus., 114 illus. in color.,

Hardcover

ISBN: 978-3-319-56474-6