

Table of Contents

Foreword.....	V
Preface.....	VII
List of Contributors.....	XXI
Part I – Key Principles and Legal Framework for SEA	1
1 Key Principles of SEA	3
<i>Elsa João</i>	
1.1 Introduction	3
1.2 Environmental Assessment of ‘Strategic Actions’	4
1.3 Tiering and the Link between SEA and Project EIA	4
1.4 Two Key Principles of SEA.....	7
1.5 The Ideal SEA Team	12
1.6 Conclusions and Recommendations	13
2 Purpose and Background of the European SEA Directive	15
<i>Christian Kläne and Eike Albrecht</i>	
2.1 Introduction	15
2.2 The SEA Directive and its European Context	15
2.3 Definition of SEA	22
2.4 History of the SEA Directive.....	22
2.5 Content, Objectives and Purpose of the SEA Directive.....	25
2.6 Outlook	27
2.7 Conclusions and Recommendations	28
3 Legal Context of the SEA Directive – Links with other Legislation and Key Procedures.....	31
<i>Eike Albrecht</i>	
3.1 Introduction	31
3.2 Competence of the Community	31
3.3 Relation to the Aarhus Convention.....	33
3.4 Relation to the Espoo Convention	34
3.5 Harmonisation of Environmental Assessment Procedures	34
3.6 Relation to other European Acts	35
3.7 Area of Application	39
3.8 Procedure of SEA	45
3.9 Consequences of Mistakes in the SEA Procedure	52
3.10 Conclusions and Recommendations	52

4 Transposition of the SEA Directive into National Law – Challenges and Possibilities	57
<i>Lothar Knopp and Eike Albrecht</i>	
4.1 Introduction	57
4.2 Connection to Member States' Laws.....	57
4.3 Transposition of the SEA Directive.....	58
4.4 Transposition into the National Legal System.....	63
4.5 Conclusions and Recommendations	66
5 Some Legal Problems of Implementing the SEA Directive into Member States' Legal Systems.....	69
<i>Jerzy Sommer</i>	
5.1 Introduction	69
5.2 Implementation Problems in Member States.....	69
5.3 Problems in the Implementation in Poland.....	73
5.4 Conclusions and Recommendations	78
Part II – Current Status and National Strategies for the Implementation of SEA in the European Union	81
6 Current SEA Practice in England.....	83
<i>Thomas B. Fischer</i>	
6.1 Introduction	83
6.2 Current SEA-Type Assessment Practice	84
6.3 Practice in Land Use Planning in England	86
6.4 Practice in Transport Planning.....	91
6.5 Conclusions and Recommendations	95
7 Implementing SEA in Germany.....	99
<i>Thomas Bunge</i>	
7.1 Introduction	99
7.2 Intended Amendments to the EIA Act.....	101
7.3 The Amendment to the Building Code of 24 June 2004.....	105
7.4 The Amendment to the Spatial Planning Act of 24 June 2004.....	108
7.5 Links between the new SEA Legislation and Existing Assessment / Planning Tools	108
7.6 Methodology.....	109
7.7 Data Requirements	110
7.8 Support of the Implementation and Quality Control	111
7.9 Conclusions and Recommendations	114

8 Implementing SEA in Italy – The Case of the Emilia Romagna Region	117
<i>Paola Gazzola and Maristella Caramaschi</i>	
8.1 Introduction	117
8.2 Using the Emilia Romagna Region to Explore the Implementation Status of SEA in Italy	119
8.3 Context of Planning in Italy.....	119
8.4 Relationship between Strategic Planning and SEA	121
8.5 Planning in the Region of Emilia Romagna.....	122
8.6 VALSAT versus SEA Directive	128
8.7 Implementing the SEA Directive in the Emilia Romagna Region.....	129
8.8 A Look at the Bigger Picture: Implementing the SEA Directive in Italy	130
8.9 Conclusions and Recommendations: Considerations for the Region of Emilia Romagna and Italy as a whole	131
9 First Experiences with implementing SEA Legislation in Flanders (Belgium)	137
<i>Marc Van Dyck</i>	
9.1 Introduction	137
9.2 Development of a Flemish combined Legislation on EIA and SEA	138
9.3 Practice of SEA in Flanders.....	141
9.4 Common Points of Interest for Future Use of SEA in Flanders.....	144
9.5 Conclusions and Recommendations	147
10 Implementing SEA in Austria	149
<i>Ralf Aschemann</i>	
10.1 Introduction	149
10.2 Legislative Efforts to implement the SEA Directive	150
10.3 Case Studies.....	150
10.4 SEA of the Land use Plan of Weiz	152
10.5 Accompanying Measures.....	155
10.6 Conclusions and Recommendations	156
11 Implementing SEA in Finland – Further Development of Existing Practice	159
<i>Mikael Hildén and Pauliina Jalonen</i>	
11.1 Introduction	159
11.2 Scope of Application – the EIA Act and the SEA Directive	160
11.3 SEA in Practice.....	161
11.4 Discussion.....	169
11.5 Conclusions and Recommendations	172

12 Problems of a Minimalist Implementation of SEA – The Case of Sweden.....	177
<i>Lars Emmelin and Peggy Lerman</i>	
12.1 Introduction	177
12.2 Environmental Assessment in Sweden	178
12.3 The Legislation Implementing the SEA Directive.....	181
12.4 Understanding the Swedish Mode of Implementation.....	185
12.5 Conclusions and Recommendations	189
13 National Strategy for the Implementation of SEA in the Czech Republic.....	193
<i>Lucie Václavíková and Harald Jendrike</i>	
13.1 Introduction	193
13.2 Previous Situation Regarding SEA in the Czech Republic.....	193
13.3 Current Situation Regarding SEA in the Czech Republic	196
13.4 Ensuring the Quality of SEA	199
13.5 Conclusions and Recommendations	200
14 Developments of SEA in Poland.....	201
<i>Joanna Maćkowiak-Pandera and Beate Jessel</i>	
14.1 Introduction	201
14.2 Development of SEA.....	202
14.3 Compliance of the Polish Environmental Protection Law with the European SEA Directive.....	204
14.4 Administrative Structure and Procedure of SEA in Poland.....	206
14.5 Environmental Planning and SEA	209
14.6 Availability of Environmental Data in Poland.....	210
14.7 Examples of SEA in Poland	211
14.8 Methodological Problems and Quality of SEA	213
14.9 Conclusions and Recommendations	214
15 Experiences with SEA in Latvia.....	217
<i>Sandra Ruza</i>	
15.1 Introduction	217
15.2 Practical Experience Gained with Existing Assessment Instruments and its Legal Provisions	218
15.3 Review of Differences in Applying SEA in Latvia	219
15.4 Quality Assurance.....	222
15.5 Case Study – SEA for the Latvia Development Plan.....	223
15.6 Conclusions and Recommendations	224

16 Implementing SEA in Estonia	227
<i>Olavi Hiiemäe</i>	
16.1 Introduction	227
16.2 Project EIA and SEA in Estonia	228
16.3 Actors in the SEA Process in Estonia	229
16.4 SEA in Practice.....	230
16.5 The Quality Criteria of the SEA Document.....	233
16.6 Conclusions and Recommendations	234
Part III – Experience of SEA in North America and Oceania	237
17 Improved Decision-Making through SEA – Expectations and Results in the United States.....	239
<i>Jehan El-Jourbagy and Tyson Harty</i>	
17.1 Introduction	239
17.2 National Environmental Policy Act.....	239
17.3 NEPA Analysis: Procedural Process	242
17.4 Successes and Failures.....	246
17.5 Conclusions and Recommendations	249
18 SEA in Canada.....	251
<i>Norma Powell</i>	
18.1 Introduction	251
18.2 SEA Legislation and Principles	252
18.3 Roles and Responsibilities	255
18.4 Methodologies and Tools.....	256
18.5 Documentation and Reporting	261
18.6 Critical Analysis	261
18.7 Canadian SEA Case Study.....	264
18.8 Conclusions and Recommendations	267
19 SEA of Plan Objectives and Policies to Promote Sustainability in New Zealand.....	269
<i>Ali Memon</i>	
19.1 Introduction	269
19.2 Competing Rationales Underpinning Section 32	271
19.3 The Formative Period (1974-1984)	272
19.4 A New Era in Environmental Impact Assessment (1991-Present).....	275
19.5 Section 32 Methodological Procedure	279
19.6 Conclusions and Recommendations	285

Part IV – Requirements of SEA in Developing and Fast Developing Countries.....	289
20 The Need for SEA in Kenya	291
<i>Vincent Onyango and Saul Namango</i>	
20.1 Introduction	291
20.2 Kenya and its Formulation of Strategic Decisions	292
20.3 History of Environmental Assessment of Strategic Decisions in Kenya.....	293
20.4 SEA Elements in Kenya and Tools to Implement them	294
20.5 Institutional Framework for SEA Elements.....	297
20.6 Need and Justification for SEA in Kenya	298
20.7 How SEA will Supplement EIA and Physical Planning in Kenya.....	300
20.8 Conclusions and Recommendations	301
21 SEA for Water Resource Management in Ghana	305
<i>Eric Ofori</i>	
21.1 Introduction	305
21.2 Impacts of Water Resource Developments in Ghana	306
21.3 Environmental Assessment in Ghana	308
21.4 Applying SEA and EIA to Water Resource Management in Ghana.....	310
21.5 Benefits of SEA for Water Resource Management in Ghana.....	313
21.6 Conclusions and Recommendations	315
22 SEA in Ukraine.....	321
<i>Vyacheslav Afanasyev</i>	
22.1 Introduction	321
22.2 Historical Background of SEA in Ukraine	321
22.3 The Existing Conditions of SEA Application in Ukraine.....	322
22.4 Obstacles for SEA Application in Ukraine	326
22.5 Possible Levels of SEA Development in Ukraine	327
22.6 Conclusions and Recommendations	328
23 Importance of SEA in China – The Case of the Three Gorges Dam Project.....	331
<i>Cynthia Huang and Jennifer Yang</i>	
23.1 Introduction	331
23.2 Environmental Situation and Policies in China	331
23.3 The Case Study of the Three Gorges Project.....	336
23.4 The Three Gorges Project and SEA.....	341
23.5 Conclusions and Recommendations	344

Part V – Methodologies for SEA and Public Participation.....	347
24 Tools for SEA.....	349
<i>Riki Thérivel and Graham Wood</i>	
24.1 Introduction	349
24.2 What Makes a Good SEA Tool?.....	349
24.3 SEA Tools.....	350
24.4 Impact Matrices	354
24.5 Geographical Information Systems.....	356
24.6 Causal Effect Diagrams	361
24.7 Conclusions and Recommendations	362
25 Methodological Approaches to SEA within the Decision-Making Process	365
<i>Beate Jessel</i>	
25.1 Introduction	365
25.2 Procedural and Methodological Demands on SEA and EIA – a Comparison.....	366
25.3 Identifying Possible Alternatives for Waste Dumping-Ground Sites	372
25.4 Identification and Assessment of Possible Corridors and Alignments for New Roads.....	375
25.5 Landscape Planning as an Information Base for SEA	380
25.6 Conclusions and Recommendations	382
26 Strategic Level Cumulative Impact Assessment	385
<i>Riki Thérivel</i>	
26.1 Introduction	385
26.2 Definitions and Concepts.....	386
26.3 Principles of Cumulative Impact Assessment.....	388
26.4 Carrying out Cumulative Impact Assessment.....	388
26.5 Conclusions and Recommendations	394
27 Handling Transboundary Cumulative Impacts in SEA.....	397
<i>Tyson Harty, Daniel Potts, Donald Potts and Jehan El-Jourbagy</i>	
27.1 Introduction	397
27.2 Definition of Cumulative Effects.....	398
27.3 Cumulative Effects Analysis in the US	399
27.4 Transboundary Implications of Cumulative Effects	405
27.5 Conclusions and Recommendations	407

28 Cultural Integrity as a Criterion of SEA.....	409
<i>Engelberth Soto-Estrada, Rina Aguirre-Saldivar and Shafi Noor Islam</i>	
28.1 Introduction	409
28.2 The Impact on Cultural Integrity	410
28.3 Consideration of Cultural Elements within SEA	411
28.4 The Concept of Culture	412
28.5 The Cultural Impact Assessment	416
28.6 Cultural Impact Assessment Procedure	417
28.7 Conclusions and Recommendations	419
29 Requirements and Methods for Public Participation in SEA.....	421
<i>Stefan Heiland</i>	
29.1 Introduction	421
29.2 Opportunities and Obstacles of Public Participation in SEA.....	422
29.3 What Does “Public” Mean?	423
29.4 What Does Participation Mean?	424
29.5 Methods of Public Participation within SEA – Possibilities and Experiences.....	427
29.6 Conclusions and Recommendations	430
30 Public Participation for SEA in a Transboundary Context	433
<i>Harry Meyer-Steinbrenner</i>	
30.1 Introduction	433
31.2 Public Participation in the SEA Directive	434
30.3 Methodological Aspects	435
30.4 Public Participation for the SEA in a Transboundary Context	436
30.5 Pilot Project	436
30.6 Conclusions and Recommendations	440
31 Developing Quantitative SEA Indicators Using a Thermodynamic Approach	443
<i>Jo Dewulf and Herman Van Langenhove</i>	
31.1 Introduction	443
31.2 Sustainability and Technology	444
31.3 Thermodynamics – its Basic Laws and the Exergy Concept.....	447
31.4 Quantitative Information for the SEA of Technology from the Thermodynamic Approach	449
31.5 Conclusions and Recommendations	456
32 A Structural and Functional Strategy Analysis for SEA	459
<i>Anastássios Perdicoúlis</i>	
32.1 Introduction	459
32.2 Background and Definitions	460

32.3	The Method of Strategy Analysis	462
32.4	Contribution of the Strategy Analysis.....	466
32.5	Conclusions and Recommendations	468
Part VI – SEA for Abiotic and Biotic Resources	471	
33 Soil Resources and SEA	473	
<i>Robert Mayer</i>		
33.1	Introduction	473
33.2	SEA Links with Environmental and Planning Legislation in Germany	475
33.3	Impacts and Effects – Adequate Methods for Soil Evaluation	478
33.4	Methods Relating Soil Properties with Functions.....	482
33.5	Strength and Weakness of Methodologies, Data Requirements	487
33.6	Synergies from the Use of a Common Environmental Data Base	489
33.7	Conclusions and Recommendations	491
34 Towards the Implementation of SEA – Learning from EIA for Water Resources	495	
<i>Damian Lawler</i>		
34.1	Introduction	495
34.2	Water in the SEA and EIA Processes	496
34.3	Water and energy resources of Azerbaijan	498
34.4	Environmental Impacts Summary.....	499
34.5	Challenges for EIA Procedures in the FSU	499
34.6	Water Resource Data Appropriateness: General Limitations for EA	500
34.7	Specific Environmental Data Issues in the FSU	504
34.8	A Revised Water Impact Assessment (WIA) Procedure	504
34.9	SEA into the Future: Learning from Project EIA	505
34.10	Conclusions and Recommendations	508
35 Links between the Water Framework Directive and SEA.....	513	
<i>Natalia Gullón</i>		
35.1	Introduction	513
35.2	From a “Hydrological Policy” to a Sustainable “Water Policy”	513
35.3	Strengths of SEA in the Water Sector.....	514
35.4	Weaknesses of SEA in the Water Sector	516
35.5	SEA Directive and the Water Framework Directive.....	517
35.6	Conclusions and Recommendations	521

36 Assessing Biodiversity in SEA	523
<i>Udo Bröring and Gerhard Wieglob</i>	
36.1 Introduction	523
36.2 Definition of Biodiversity.....	524
36.3 Measurability of Biodiversity in Theory and Practice	525
36.4 The Value of Biodiversity	528
36.5 Conclusions and Recommendations	533
37 Biodiversity Programmes on Global, European and National Levels Related to SEA	539
<i>Gerhard Wieglob and Udo Bröring</i>	
37.1 Introduction	539
37.2 Determinants or Driving Forces of Biodiversity	540
37.3 Biodiversity in SEA.....	541
37.4 Available Data for Biodiversity Assessment	546
37.5 Decision-Aid in Biodiversity Protection.....	547
37.6 A Hypothetical Example	548
37.7 Conclusions and Recommendations	550
Part VII – Implementing SEA in Spatial and Sector Planning	555
38 Co-ordination of SEA and Landscape Planning.....	557
<i>Frank Scholles and Christina von Haaren</i>	
38.1 Introduction	557
38.2 The Intention of the SEA Directive	558
38.3 The Situation in Germany.....	558
38.4 The Intersection of SEA and Landscape Planning	559
38.5 Conclusions and Recommendations – A Model for Procedural Integration and its Requirements.....	566
39 Urban Planning and SEA	571
<i>Markus Reinke</i>	
39.1 Introduction	571
39.2 Existing Liabilities due to the Federal Building Code.....	572
39.3 Relation of Landscape Planning and Urban Planning	573
39.4 Analysis of SEA Liabilities Exceeding Previous Requirements	575
39.5 Suggestions for Contents of SEA and the Assessment of Alternatives	578
39.6 The Question of Acceptability.....	582
39.7 Conclusions and Recommendations	583

40 SEA in Transport Planning in Germany	585
<i>Wolfgang Stein, Jürgen Gerlach and Paul Tomlinson</i>	
40.1 Introduction	585
40.2 Screening	586
40.3 Scoping	587
40.4 Identifying and Describing the Environmental Effects.....	590
40.5 Assessing Alternatives	592
40.6 Decision-Making Process	592
40.7 Monitoring	595
40.8 Conclusions and Recommendations	595
41 SEA for Agricultural Programmes in the EU	599
<i>Michael Schmidt, Harry Storch and Hendrike Helbron</i>	
41.1 Introduction	599
41.2 EU Agricultural Policy 1992-2005	600
41.3 Influence of CAP on Agricultural Land Use	602
41.4 SEA for Agricultural Plans and Programmes	605
41.5 Suitability of the German Preliminary Agrarian Structure Planning (gAEP) for the implementation of SEA.....	608
41.6 Conclusions and Recommendations	614
42 SEA of Waste Management Plans – An Austrian Case Study.....	621
<i>Kerstin Arbter</i>	
42.1 Introduction	621
42.2 Fields of Application	621
42.3 The SEA for the Viennese Waste Management Plan.....	622
42.4 Methodologies and Data	623
42.5 Process Design and Public Participation.....	625
42.6 Conclusions and Recommendations	628
43 Mining Industry and SEA – An Example in Turkey.....	631
<i>Evren Yaylaci</i>	
43.1 Introduction	631
43.2 SEA and the Mining Industry	632
43.3 Challenges of SEA in Developing Countries.....	640
43.4 Conclusions and Recommendations	642
Part VIII – Conclusions	647
44 Capacity-Building and SEA.....	649
<i>Maria do Rosário Partidário</i>	
44.1 Introduction	649
44.2 Meaning of Capacity-Building for SEA	650

44.3 Current Key Priorities for SEA as a Strategic Impact Assessment Approach.....	653
44.4 What are the Needs and the Key Drivers in SEA Capacity-Building?	655
44.5 Training for SEA Capacity-Building.....	659
44.6 Conclusions and Recommendations	661
45 A Critique of SEA from the Point of View of the German Industry	665
<i>Jürgen Ertel</i>	
45.1 Introduction	665
45.2 The Role of Industry in the Legislative Process.....	666
45.3 The Priority Level of SEA for the Industry	666
45.4 Involvement of the Industry in the Legislative Process	668
45.5 Conclusions and Recommendations	671
46 Best Practice Use of SEA – Industry, Energy and Sustainable Development.....	673
<i>Ross Marshall and Thomas B. Fischer</i>	
46.1 Introduction	673
46.2 Institutional Links Between SEA and Industry	674
46.3 SEA Application in Industry Planning	675
46.4 SEA – A Strategic Decision-Making Framework for Businesses.....	677
46.5 Electricity Provision and the UK Transmission Industry	678
46.6 The Perceived Benefits of SEA to ScottishPower	680
46.7 The Mid-Wales Case Study – ScottishPower’s First Steps to SEA implementation	680
46.8 Applying the Seven Phases of Regional Transmission Network SEA.....	685
46.9 Conclusions and Recommendations	687
47 SEA Outlook – Future Challenges and Possibilities.....	691
<i>Elsa João</i>	
47.1 Introduction	691
47.2 SEA Barrier 1: Bland Alternatives	691
47.3 SEA Barrier 2: Weak Public Participation	693
47.4 SEA Barrier 3: Lack of the ‘Right Data’	694
47.5 SEA Barrier 4: Poor Procedures and Methodology	697
47.6 Conclusions and Recommendations	698
Appendix 1 – The Full Text of the SEA Directive	701
Appendix 2 – Consolidated List of Legislation	715
Subject Index	733