

Table of Contents

1. ELOISE research and the implementation of EU policy	1
in the coastal zone	1
Laure Ledoux, Jan E. Vermaat, Laurens M. Bouwer, Wim Salomons, and R. Kerry Turner	
Introduction	1
The ELOISE programme	2
The ELOISE vision	2
Programme	3
Policy issues in the European coastal zone	3
The current situation	3
EU policy in the coastal zone	6
Research support for policy implementation: The ELOISE contribution	12
New priorities	15
References	16
Appendix 1: List of projects that provided Input in the survey	18
 2. Land-ocean fluxes and coastal ecosystems –	
a guided tour of ELOISE results	21
Peter M.J. Herman, Tom Ysebaert, and Carlo H.R. Heip	
Introduction	21
Input of nutrients into the coastal zone	23
Atmospheric nutrient inputs	23
Watershed processes	25
River processes	28
Estuarine transformations of nutrients and organic carbon	30
Nitrogen cycle	30
A coupled view of sediment biogeochemistry	34
Metal biogeochemistry – the extreme case of the Tinto/Odiel rivers	36
Release of biogases	36
Structure and function of ecosystems under anthropogenic pressure	39
Nutrient loading and the response in coastal pelagic communities	39
The benthic food web	42
The role of physical forcing	45
Basin-scale modelling	46
Conclusions	46
A shifting view on coastal ecosystem processes	46
The human impact	47
Integration of socio-economic and natural sciences	48
European scientific infrastructure	48
References	49

3. Defining a good ecological status of coastal waters – a case study for the Elbe plume	59
Wilhelm Windhorst, Franciscus Colijn, Saa Kabuta, Remi P.W.M. Laane, and Hermann-Josef Lenhart	
Introduction	60
Ecosystem services and ecological impact: A theoretical background.....	61
The indication of self-organising capacity of ecosystems	65
Applying models to indicate the ecological state of ecosystems	67
Case study: Application of the ecosystem model ersem to describe reference conditions in the elbe plume	67
Concluding remarks.....	72
References	73
 4. Bathing water quality	 75
Stavros Georgiou	
Introduction	75
The mixed methodological approach.....	76
Physical/technical assessment	78
Economic assessment	84
Public/social assessment.....	90
Background	90
Approach.....	90
Survey results	93
Focus group results	95
Recommendations and conclusions	98
References	99
 5. Establishing coastal and marine reserves – with the emphasis on fisheries	 103
Han Lindeboom and Saara Bäck	
Introduction	103
Marine reserves for conservation purposes.....	105
Reasons to create protected areas	106
Protection of specific species or groups of species	106
Protection of juvenile fish from early destruction	107
Creation of a more ‘natural’ age composition within fish populations .	107
Protection of certain habitats, such as reefs, seagrass beds, maerl grounds, stony areas.....	108
Prevention of the continuous impact of certain fishing techniques which change the ecosystem	108
Protection of areas for scientific research and monitoring purposes.....	108
An example: The Dutch North Sea	109
Participation and involvement of stakeholders	112
Established marine reserves.....	112
Procedures to establish marine conservation areas.....	113
Conclusion.....	114
References	115

6. Valuing coastal systems.....	119
Mihalis s. Skourtos, Areti D. Kontogianni, Stavros Georgiou, and R. Kerry Turner	
Introduction	119
Facts and values in sustainable coastal management.....	121
Coast: A complex system.....	122
Trade-offs at the coast and at the margin	123
Valuation: A mixed methodological approach.....	125
The analytics of economic valuation of natural resources	127
What is to be valued?	127
Pareto-relevant welfare changes.....	128
The mechanics of preference elicitation	129
Some practical examples	130
References	133
 7. Group report: Methodologies to support implementation of the Water Framework Directive	 137
Paula S. Moschella, Remi P.W.M. Laane, Saara Bäck, Horst Behrendt, Giuseppe Bendoricchio, Stavros Georgiou, Peter M.J. Herman, Han Lindeboom, Mihalis S. Skourtos, Paul Tett, Maren Voss, and Wilhelm Windhorst	
Introduction	138
Technical requirements for implementation of the WFD	139
Classification of status of surface waters and implications for water management	140
Ecological status and reference conditions	140
Feasibility of the ecological classification scheme and criteria for implementation.....	142
Water quality	144
Priority substances	144
Bathing water quality.....	145
Tools for the management of protected areas under the WFD	145
Reference conditions and the implementation of ecological classification schemes	148
Interactions between ecology, society, and economics.....	149
Conclusions	151
References	151
 8. The EU Water Framework Directive: Challenges for institutional implementation.....	 153
Erwin F.L.M. de Bruin, Frank G.W. Jaspers, and Joyeeta Gupta	
Introduction	154
A theoretical framework: Integrated water resources management.....	156
Case studies	158
The Netherlands	158
Turkey	161
Comparative aspects	164

Extrapolation to the coast	166
The coastal zone and river basin districts.....	166
The land-sea continuum of the coastal zone	166
Institutional coherence	167
Conclusions	168
References	169
 9. Inclusive and community participation in the coastal zone: Opportunities and dangers	 173
Tim O’Riordan	
Introduction	173
The pros and cons of deliberative inclusion	175
Integrated coastal management and the challenge to inclusive participation..	178
Redesigning the management of coastal futures.....	180
References	184
 10. Group report: Institutional and capacity requirements for implementation of the water framework directory	 185
Wietze Lise, Jos Timmerman, Jan E. Vermaat, Tim O’Riordan, Tony Edwards, Erwin F.L.M. de Bruin, Areti D. Kontogianni, Kevin Barrett, Ton H.M. Bresser, and Emma Rochelle-Newall	
Introduction	185
Boundaries of the water body and management structures.....	187
Relation of WFD to other legislation.....	188
Flexibility in implementing the WFD and public participation	189
Institutional change and cost consequences.....	193
Conclusions and recommendations	197
References	197
 11. Climate change and coastal management on Europe’s coast.....	 199
Robert J. Nicholls and Richard J.T. Klein	
Introduction	200
The coastal zone in Europe.....	200
Climate change and the European coast	201
Climate change impacts around Europe’s coasts	206
Framework for analysis.....	206
Impacts of sea-level rise.....	208
Possible impacts of climate change on Europe’s coastal areas	209
Responding to climate change	211
Climate change and coastal management	214
Adaptation to climate change	
in integrated coastal zone management.....	215
Improving information on climate change	
for coastal zone management	116
Conclusions and further work.....	218
References	220

12. Assessment and monitoring requirements for the adaptive Management of Europe's regional seas	227
<i>Laurence D. Mee</i>	
Introduction	227
Emerging concepts and policy drivers	228
The ecosystem approach	228
Adaptive management.....	228
An adaptive management strategy for European seas.....	229
Conceptual model of the strategy	229
Component 1: Initial assessment.....	229
Component 2: The definition of ecological quality objectives and state change indicators.....	231
Component 3: Operational objectives and their indicators	233
Component 4: Monitoring schemes and feed-back mechanisms	234
Practical application of the adaptive management scheme.....	234
Conclusion	236
References	236
13. Group report: Global change and the European coast – climate change and economic development	239
Emma Rochelle-Newall, Richard J.T. Klein, Robert J. Nicholls, Kevin Barrett, Horst Behrendt, Ton H.M. Bresser, Andrzej Cieslak, Erwin F.L.M. de Bruin, Tony Edwards, Peter M.J. Herman, Remi P.W.M. Laane, Laure Ledoux, Han Lindeboom, Wietze Lise, Snejana Moncheva, Paula S. Moschella, Marcel J.F. Stive, and Jan E. Vermaat	
Introduction	240
Human values versus natural systems.....	242
Scenario-based analysis	243
Managing the dynamic coast.....	247
Tools – analytical, management, and communication	247
Proactive strategies	249
Improving the knowledge base	251
References	252
14. Integrated environmental assessment and coastal futures.....	255
R. Kerry Turner	
Introduction	255
Integrated environmental assessment	258
DP-S-I-R analysis	260
Scenarios and coastal zone management	263
European coastal futures.....	265
References	270

15. Group report: Integrated assessment and future scenarios for the coast.....	271
Corinna Nunneri, R. Kerry Turner, Andrzej Cieslak, Andreas Kannen, Richard J. T. Klein, Laure Ledoux, Joop M. Marquenie, Laurence D. Mee, Snejana Moncheva, Robert J. Nicholls, Wim Salomons, Rafael Sardá, Marcel J.F. Stive, and Tiedo Vellinga	
Introduction	272
Methodology.....	272
The foresight exercise: DP-S-I-R across Europe	275
Results: Identifying significant drivers and pressures	278
Coastal DP-S-I-R matrix: Contemporary trends and recent past experiences	279
Scenario analysis.....	283
Conclusions	285
References	289
 16. Tourism development in the Costa Brava (Girona, Spain) – how integrated coastal zone management may rejuvenate its lifecycle	291
Rafael Sardá, Joan Mora, and Conxita Avila	
Introduction	291
Tourism in the Costa Brava	295
A life cycle analysis of the Costa Brava Tourist product.....	297
Present numbers for the tourism industry in the Costa Brava	300
The need for development and ICZM process in the Costa Brava	306
Discussion.....	311
References	313
 17. Management of contaminated dredged material in the port of Rotterdam	315
Tiedo Vellinga and Marc Eisma	
Introduction	315
Sediment management in the port of Rotterdam	317
Rhine research project.....	317
Emission control, with a shift from point to diffuse sources.....	317
Harmonisation of the Rhine – and North Sea policy.....	319
From dredged material to sediment management	319
Disposal and beneficial re-use of dredged material	320
Disposal of dredged material	320
The Dutch policy.....	320
The Rotterdam activities	321
Conclusions	322
References	322

18. Integrated assessment for catchment and coastal zone management:	
The case of the humber	323
Julian Andrews, Nicola Beaumont, Roy Brouwer, Rachel Cave, Tim Jickells, Laure Ledoux, and R. Kerry Turner	
Introduction	323
Integrated environmental assessment (IEA) for coastal zone management ...	324
Scoping and problem auditing.....	325
Identification and selection of appropriate decision-making methods ...	326
Data collection, monitoring, and indicators	326
Evaluation of project, policy, or programme options	327
The Humber case study and the DP-S-I-R framework	327
The Humber catchment and the coastal zone	327
The DP-S-I-R framework for the Humber	328
Institutions and stakeholders in the Humber	331
Scenarios methodology.....	335
What are scenarios?.....	335
National scenario templates	337
Regional scenarios	338
Data collection and sources of contaminants.....	340
Policy analysis	342
The general approach	342
A cost-effectiveness analysis of reducing copper inputs to the Humber..	343
From scenarios to policy analysis	346
Towards integrated catchment management	348
Conclusions	349
References	350
19. The impact of subsidence and sea level rise in the Wadden Sea:	
Prediction and field verification	355
Joop M. Marquenie and Jaap de Vlas	
Introduction	355
Observed subsidence at Ameland-Oost after 13 years of exploitation	356
Subsidence	357
Sea level and groundwater levels	357
Geomorphology	358
Salt marsh and dune vegetation.....	359
Birds.....	359
Grazing and drinking water: Economic losses	359
Predicting environmental impacts of future gas exploitation.....	359
Estimating subsidence and sediment requirements	360
Salt marshes	361
Benthic fauna of the tidal flats	361
Effects on wader numbers in the Wadden Sea	362
Options for mitigation and compensation.....	362
Conclusions	362
References	363

<http://www.springer.com/978-3-540-23454-8>

Managing European Coasts

Past, Present and Future

Vermaat, J.E.; Bouwer, L.; Turner, R.K.; Salomons, W.

(Eds.)

2005, XXII, 388 p., Hardcover

ISBN: 978-3-540-23454-8