

Environmental Science and Engineering
Subseries: Environmental Science

Series Editors: R. Allan • U. Förstner • W. Salomons

Susanne Stoll-Kleemann
Martin Welp (Eds.)

Stakeholder Dialogues in Natural Resources Management

Theory and Practice

With 20 Figures

 Springer

EDITORS:

**PD DR. SUSANNE STOLL-
KLEEMANN**
HUMBOLDT-UNIVERSITÄT ZU
BERLIN, DEPARTMENT OF
AGRICULTURAL ECONOMICS AND
SOCIAL SCIENCES, RESEARCH
GROUP GOBI,
LUISENSTR. 53
10099 BERLIN, GERMANY

PROF. DR. MARTIN WELP
SOCIOECONOMICS AND
COMMUNICATION
UNIVERSITY OF APPLIED SCIENCES
EBERSWALDE, FACULTY OF
FORESTRY
ALFRED-MOELLER-STR. 1
16225 EBERSWALDE, GERMANY

E-mail: susanne.stoll-kleemann@
agrار.hu-berlin.de

E-mail: martin.welp@
fh-eberswalde.de

ISSN- 1863-5520

ISBN 10 3-540-36916-3 **Springer Berlin Heidelberg New York**

ISBN 13 978-3-540-36916-5 **Springer Berlin Heidelberg New York**

Library of Congress Control Number: 2006934202

This work is subject to copyright. All rights are reserved, whether the whole or part of the material is concerned, specifically the rights of translation, reprinting, reuse of illustrations, recitation, broadcasting, reproduction on microfilm or in any other way, and storage in data banks. Duplication of this publication or parts thereof is permitted only under the provisions of the German Copyright Law of September 9, 1965, in its current version, and permission for use must always be obtained from Springer-Verlag. Violations are liable to prosecution under the German Copyright Law.

Springer is a part of Springer Science+Business Media
springeronline.com
© Springer-Verlag Berlin Heidelberg 2006

The use of general descriptive names, registered names, trademarks, etc. in this publication does not imply, even in the absence of a specific statement, that such names are exempt from the relevant protective laws and regulations and therefore free for general use.

Cover design: E. Kirchner, Heidelberg
Production: A. Oelschläger
Typesetting: Camera-ready by the Editors
Printed on acid-free paper 30/2132/AO 543210

To Luisa and Elina

Contents

List of Figures	XV
List of Tables	XVII
List of Contributors	XIX
Acknowledgements	XXVIII

Part I Setting the Scene

Foreword:

Participatory Processes for Natural Resource Management.....	3
<i>Ortwin Renn</i>	

Need for analytic-deliberative processes	3
The first element: The integration of science	4
The requirements for deliberative processes	6
Commitment matters	9
References	12

1 Towards a More Effective and Democratic Natural Resources Management	17
<i>Susanne Stoll-Kleemann, Martin Welp</i>	

1.1 Objectives and structure of the book	18
1.2 Context and definitions.....	21
1.3 Benefits of participation and stakeholder dialogues	27
1.4 Difficulties of participation and stakeholder dialogues	30
1.5 Lack and need of theory	33
References	34

Part II Theories and Tools

2 Integrative Theory of Reflexive Dialogues	43
<i>Martin Welp, Susanne Stoll-Kleemann</i>	
2.1 The need for an integrative theory	43
2.2 The conceptualisation of the Integrative Theory of Reflexive Dialogues	44
2.3 Social Psychological Theories	45
2.3.1 Impacts of group diversity and group processes on stakeholder dialogues	45
2.3.2 Stereotyping as a limiting factor for group learning	48
2.3.3 The Theory of Psychological Reactance	50
2.4 Theories of Organisational Learning.....	51
2.5 Formal approaches	54
2.5.1 Are stakeholders rational actors?	54
2.5.2 Bayesian learning.....	56
2.5.3 Multi-criteria decision analysis.....	62
2.6 Other contributing theories.....	63
2.7 The Integrative Theory of Reflexive Dialogues.....	65
2.8 Conclusions	71
References	73
3 ‚Participation’ in Development Thinking – Coming to Grips with a Truism and its Critiques.....	79
<i>Uta Berghöfer, Augustin Berghöfer</i>	
3.1 Overview	79
3.2 Introduction: On doctors and patients	80
3.3 History: Changing paradigms in development thinking.....	81
3.4 Implementing participation: The promise of Participatory Rural Appraisal (PRA).....	86
3.5 Seeking clarity	88
3.5.1 Defining participation.....	88
3.5.2 Four axes of differentiation	90
3.6 The Pitfalls: Critiques of participation	96
3.6.1 Who participates?	96
3.6.2 Participation: in what dimension?	99
3.6.3 How does the process of participation take place?.....	101

3.6.4 What is the purpose of participation? 106
 3.7 Conclusion: for a more precise approach to participation 109
 References 112

4 Evaluating Stakeholder Dialogues 117

Angela Oels

4.1 The case for stakeholder dialogues 118
 4.1.1 Defining stakeholder dialogues 118
 4.1.2 Stakeholder dialogues for science 118
 4.1.3 Stakeholder dialogues for policy-making 120
 4.1.4 Stakeholder dialogues for management 121
 4.1.5 Three types, many evaluation strategies 122
 4.2 Evaluating stakeholder dialogue 123
 4.2.1 Why and when to evaluate 123
 4.2.2 Criteria for the evaluation 124
 4.2.3 Process or outcome criteria 126
 4.2.4 Outsider or participatory evaluation 126
 4.2.5 Quantitative or qualitative methods 127
 4.2.6 The use of evaluation findings 128
 4.3 Criteria for the evaluation 128
 4.3.1 Theory-based criteria 128
 4.3.2 User-based criteria 133
 4.4 Common findings of evaluations 139
 4.4.1 Stakeholder dialogues for science 141
 4.4.2 Stakeholder dialogues for policy-making 142
 4.4.3 Stakeholder dialogues for management 143
 4.4.4 Criteria for success 144
 4.5 Conclusions 145
 References 147

5 Tools for Stakeholder Assessment and Interaction 153

Jürgen Scheffran

5.1 Introduction 153
 5.2 Stakeholder involvement in interactive decision-making 154
 5.3 Tools in stakeholder interaction and modelling 157

5.3.1 The stakeholder concept in management and systems science.....	157
5.3.2 Stakeholder modelling and simulation	158
5.4 Tools in environmental conflict resolution and mediation	162
5.5 Interactive methods for group decision and negotiation support.....	165
5.5.1 Basic approaches	165
5.5.2 Internet tools for negotiation analysis	167
5.6 Agent-Based Modelling.....	169
5.6.1 Structure and behavior of agents	169
5.6.2 Simulation environments and environmental simulation ..	170
5.7 Stakeholders in Integrated Assessment	173
5.7.1 Participation and validation in Integrated Assessment modelling	173
5.7.2 Examples of Integrated Assessment models	175
5.8 Integration and outlook.....	177
References	181

6 Geo-information Visualisation Tools to Facilitate Stakeholder Dialogues in Land and Water Management Planning 187
Marleen Maarleveld, Rob van de Velde, Joost van Uum, Irene Pleisier

6.1 The stakeholder dialogue context addressed	187
6.2 Theoretical perspectives for facilitating stakeholder dialogues through geo-information visualisation tools	189
6.2.1 Planning as learning	189
6.2.2 Geo-information visualisation tools as a means to facilitate stakeholder dialogues and decision-making.....	193
6.3 Geo-visualisation practice in the facilitation of stakeholder dialogues and decision making in land and water management planning	196
6.3.1 Realizing the problem: Joint learning for watershed management in the Ifugao, Philippines.....	197
6.3.2 Exploring alternatives: Visualising consequences of flood management choices in the EU.....	200
6.3.3 Experiencing the future: Flying through planned urban expansion in Groningen, the Netherlands	203
6.4 Conclusion: Seeing is believing	206
References	209

**Part III Case Studies in Environmental Policy,
Management and Science**

7 Science-based Stakeholder Dialogues in Climate Change
Research 213
*Martin Welp, Anne C. de la Vega-Leinert,
 Susanne Stoll-Kleemann, Cornelia Fürstenau*

7.1 Introduction 213
 7.2 Stakeholder dialogues in climate change research 216
 7.2.1 Experiences at PIK 216
 7.2.2 European Climate Forum (ECF) 219
 7.2.3 ATEAM..... 221
 7.2.4 SilviStrat 224
 7.3 Methods applied in the dialogues 225
 7.4 Reflections 229
 7.4.1 How can we evaluate science-based stakeholder
 dialogues?..... 229
 7.4.2 Achievements 230
 7.4.3 Dealing with different expectations..... 233
 7.5 Conclusions: dialogue practice in view of the Integrative
 Theory of Reflexive Dialogues 235
 References 238

**8 Science in Support of the Forest Biodiversity Programme for
 Southern Finland - Working from the inside..... 241**
Eva Hellström

8.1 Introduction 241
 8.2 Traditions of forest protection in Finland 242
 8.3 Scientific involvement in compiling the forest biodiversity
 programme for Southern Finland 244
 8.3.1 From “outside” involvement to “inside” involvement 244
 8.3.2 Setting the stage for information-sharing and
 trust-building 247
 8.3.3 Conceptual work and process support 249
 8.3.4 Strategies and outcomes 252

8.4 Lessons learned	255
8.4.1 New perspectives on the utilization of science.....	255
8.4.2 Challenges in working from the “inside”	257
References	259
9 Public Participation during Site Selections for Natura 2000 in Germany: The Bavarian Case.....	261
<i>Melanie Eben</i>	
9.1 Introduction	261
9.2 Public participation – just a new buzz word?.....	261
9.3 The Biodiversity Strategy of the European Union: the Natura 2000 network	262
9.4 Implementation procedures of Natura 2000	264
9.5 Opposition to protected areas in Bavaria.....	266
9.6 Reasons for opposition	267
9.7 The participatory process in Bavaria	269
9.8 Public participation – a success or failure?.....	271
9.9 What can we learn from the Bavarian case?.....	273
References	276
10 Experiences with Stakeholder Dialogues in Natural Resources Management in Ecuador	279
Two Case Studies from German Development Cooperation Projects	279
10.1 Participation in the Machalilla National Park, Ecuador	280
<i>Michael Sturm, Jorge Samaniego Rivera</i>	
10.1.1 Introduction	280
10.1.2 The participatory approach of the German Development Service.....	282
10.1.3 Participation in the Machalilla National Park (MNP), Ecuador	283
10.1.4 Examples of participation in the MNP	288
10.1.5 Conclusions, transferability, and lessons learned.....	296

10.2 Community Forest Management in Esmeraldas - Is Constructive Dialogue Possible?	304
<i>Jörg Linke</i>	
10.2.1 Introduction to a Community Forest Management Project in Esmeraldas	304
10.2.2 What kind of problems and conflicts existed before the stakeholder dialogue was established?	306
10.2.3 Who are the actors?	307
10.2.4 What have the objectives of the stakeholder dialogue been?	310
10.2.5 Description of the communication tools.....	312
10.2.6 Outcome analysis.....	317
10.2.7 Lessons learned	319
References.....	321
11 Incorporating Local People through Economic Incentives at Lake Mburo National Park, Uganda – Africa Works!	325
<i>Christiane Aeverbeck</i>	
11.1 Non-participatory conservation history of Lake Mburo National Park.....	325
11.2 Participatory conservation history of Lake Mburo National Park.....	327
11.3 A new wildlife management policy towards participation in Uganda	328
11.4 The Lake Mburo Wildlife Utilisation Study.....	329
11.5 Participatory aspects of the Lake Mburo Wildlife Use Study	329
11.5.1 Planning.....	330
11.5.2 Introduction	330
11.5.3 Wildlife research	331
11.5.4 Focus group interviews.....	331
11.5.5 Collecting legends, phrases and sayings.....	332
11.5.6 Feedback to interviews	332
11.5.7 Impala cropping	332
11.5.8 Presentation of study results	334
11.6 Lessons learnt on participation	337
11.7 Conclusion	340
11.8 Summary.....	341
Acknowledgements	341
References	342

Part IV Perspectives

12 Linking Case Studies to the Integrative Theory of Reflexive Dialogues	347
<i>Susanne Stoll-Kleemann, Martin Welp</i>	
12.1 Case studies in view of the Integrative Theory of Reflexive Dialogues	347
12.1.1 Actors: who were the stakeholders?	348
12.1.2 Structures	351
12.1.3 Processes	355
12.1.4 Methods	358
12.1.5 Outcomes	359
12.2 Analysis of the case studies using the book's other theoretical approaches	363
12.2.1 Participation and development	363
12.2.2 Stakeholder dialogues and tool development	366
12.3 Conclusions	368
References	370
Epilogue: Spreading the Ripples	373
<i>Tim O'Riordan</i>	
Index	377

List of Figures

Figure 2.1	A simple Bayesian belief network	60
Figure 2.2	Elements of the Integrative Theory of Reflexive Dialogues	68
Figure 5.1	The stakeholder cycle and tools for stakeholder assessment and management	179
Figure 6.1	Kolb's learning cycle	190
Figure 6.2	Planning as learning	191
Figure 6.3	Single, double, and triple loop learning	192
Figure 6.4	Combining maps, aerial photos, and GIS	198
Figure 6.5	GIS-assisted learning in planning	199
Figure 6.6	Geo-information based visualisation of water retention effects in Hurwenense Uiterwaard	202
Figure 6.7	Bird's-eye view of the urban housing development project Groningen Meerstad, the Netherlands	204
Figure 8.1	The process of compiling the Forest Biodiversity Programme for Southern Finland	249
Figure 9.1	Map of all 16 German Bundesländer	265
Figure 10.1	Map of the south-western part of the Ecuadorian coastal province Manabí	281
Figure 10.2	Tree nursery in Agua Blanca	289
Figure 10.3	Plantation of trees along the main street of Puerto López	289
Figure 10.4	School in Soledad, a small village in the Machalilla National Park	292
Figure 10.5	Environmental education in Casas Viejas	292
Figure 10.6	Tools for dialogues in MFC-E	316
Figure 12.1	Elements of the Integrative Theory of Reflexive Dialogues	348

List of Tables

Table 2.1	Conditional probability table of an imaginary stakeholder	60
Table 3.1	Basic questions: Axes of differentiation	90
Table 3.2	“Who participates?”	92
Table 3.3	“In what dimension?”	93
Table 3.4	“How does the process of participation take place?”	93
Table 3.5	“What is the purpose of participation?”	95
Table 4.1	Conditions for the fair and competent ideal speech situation	129
Table 4.2	Three examples of criteria to test for the competence of a discourse	130
Table 4.3	Stakeholders to the evaluation in Rushmoor Borough	134
Table 4.4	Evaluation criteria and data sources generated in a stakeholder-based evaluation	135
Table 4.5	Comparative view of theory-based and stakeholder-based criteria sets	139
Table 5.1	Agent-based models in environmental assessment	172
Table 7.1	Project description	218
Table 9.1	The percentages of designated national territory under the Birds Directive and the Habitats Directive	271
Table 10.1	History of conflicts and participation in the Machalilla National Park	298
Table 11.1	Participatory aspects of the Lake Mburo Wildlife Use Study and Pilot Project	333

List of Contributors

Dr. Christiane Aeverbeck is executive director of Transfer-21, a Germany-wide program on education for sustainable development. She has worked as a consultant for the German Council for Sustainable Development, conducted a research project on sustainable resource use in Uganda, worked as a senior advisor for a German NGO in Uganda, and as senior researcher in a project funded by the Federal Environmental Agency on marine pollution. She holds a Master's degree in biology and a Ph.D. in natural science.

Augustin Berghöfer works for the Omora Foundation in the recently established Cape Horn Biosphere Reserve, coordinating the outreach activities of this small Chilean NGO dedicated to bio-cultural research and conservation. With a background in economics and political science, he has been studying the obstacles to participatory endeavours in post-conflict development assistance. As member of Susanne Stoll-Kleemann's research group on biodiversity governance, he investigated experiences of participation in protected area management.

Uta Berghöfer works at the UFZ Centre for Environmental Research in Leipzig. Trained in geography, she is currently completing her Ph.D., exploring the diverse ways that humans relate to nature and the significance of these relationships for biodiversity conservation. As a member of BIODIVERSITY - a German-Chilean research project studying possibilities for implementing the Ecosystem Approach of the Convention on Biological Diversity - she has been conducting qualitative social research in southern Chile since 1998. In this context she has accompanied the initiative to establish the Cape Horn Biosphere Reserve, advising in the design and organisation of the participatory processes and the associated local information campaign.

Melanie Eben studied ecology at the University of East Anglia (UK) and obtained a Master's degree in conservation from University College London. Her interest in conservation, environmental education, monitoring systems, and participatory methods and instruments has led her to undertake research in various Latin American countries. She is currently living in Ecuador, where she is working as a freelance consultant.

Cornelia Fürstenau is a junior research scientist at the Potsdam Institute for Climate Impact Research (Department of Global Change and Natural Systems). She has a university degree (Diploma) in forest science. Her research focuses on the impact of forest management and climate change on different forest functions such as carbon sequestration, ground water recharge, income from timber production, and biodiversity in temperate forest ecosystems. In a science-based stakeholder dialogue, she has looked into the interests of forest user groups in the management of forest ecosystems, their goods and services, and their awareness of the future impacts of climate change on forest ecosystems.

Dr. Eeva Hellström is director of the Forest Academy for Decision-Makers, which is a discussion forum on forest issues directed at top-level decision makers throughout Finnish society. It is organised by the Finnish Forest Association, which is a co-operation and communication body that links the Finnish forest sector and related fields. She has also held numerous positions of trust related to forest policy, natural resource businesses, professional unions, rural employment, and forest science. For example, Eeva was a member of the steering group of Finland's National Forest Program during its formative period (1998-99). As a member of the Committee for Forest Protection in Southern Finland (2000-02), she chaired a working group assigned to develop new policy means of forest protection.

Dr. Jörg Linke is working for the German technical cooperation agency GTZ, where he is currently serving as an advisor in the Tunisian Ministry of Environment. In this role he coordinates two projects: i) Implementation of the United Nations Convention on Combat of Desertification (UNCCD), ii) Implementation of the UN Framework Convention on Climate Change (UNFCCC). Before this, he was coordinator of the GTZ programme component: "Sustainable management of forests, protected areas and forestry politics" in the Ministry of Environment of Ecuador. He has a Master's Degree in Forestry Science in the temperate zones and a Master's Degree in Forestry in the tropics and subtropics, as well as a Ph.D. in Forestry. Jörg also has gained broad knowledge working with pluralistic stakeholder forums (including indigenous communities and the private sector) and from experience in the conceptualisation and implementation of financing instruments for environmental management and protection, including payment systems for environmental services.

Dr. Marleen Maarleveld studied social and organizational psychology at Leyden University, the Netherlands. She worked as a researcher at the Department of Communication and Innovation Studies, Wageningen University and Research. In addition to her Ph.D. research on social-environmental learning for sustainable natural resource management, she has facilitated participatory projects in water management and management of change. She worked as a knowledge and innovation manager in the field of planning and governance and as a program manager leading an organizational development program that aimed to improve the "customer-orientation" of the organization. Currently she is working as a consultant in the field of water management and spatial development for Arcadis, an engineering and consultancy firm.

Dr. Angela Oels is Assistant Professor in International Relations at the Institute of Political Science at the University of Hamburg. She teaches the politics of international trade, environmental politics, globalisation/global governance and political theory. Dr. Oels was trained in environmental engineering and has a Ph.D. in environmental sciences. Her Ph.D. was published by LIT-Verlag under the title 'Evaluating Stakeholder Participation in the Transition to Sustainable Development: methodology, case studies, and policy implications'. She is currently working on a book project toward her German post-doctoral Habilitation degree that draws on Foucault's concept of governmentality to discuss current changes in the role and power of the state in multi-level, multi-actor governance. For a detailed CV see www.angelaOels.de.

Prof. Dr. Tim O'Riordan is Professor of Environmental Sciences at the University of East Anglia and closely associated with the Tyndall Centre for Climate Change Research, the Leverhulme Programme on Understanding Risk, and the Centre for Social and Economic Research on the Global Environment. Tim began his studies in geography at the Edinburgh University, in his home City of Edinburgh, and received his Ph.D. in Geography at Cambridge University. After a spell of teaching geography at Simon Fraser University, Vancouver, British Columbia, Canada, he took up a visiting lectureship in geography at the University of Canterbury in 1971. Returning to East Anglia in 1974, he embarked on a course in conventional politics and wrote a book on the meaning and role of environmentalism. This was the beginning of a series of publications on environmental politics and law, citizen science, the precautionary principle, and the tortuous transition to sustainable development. His research spans countryside management, biodiversity politics, risk and nuclear power, community involvement in sustainable futures, and the

deeper politics of sustainability in the contemporary age. Tim is a member of the UK Sustainable Development Commission and an academic advisor to a number of integrated scientific bodies. He also works with business on the transition to sustainability.

Irene Pleizier studied earth sciences at the Vrije Universiteit Amsterdam. At the end of her studies, she undertook an internship at the company Geodan, working on 3D visualisation and 3D GIS. After finishing her studies, she started working both for Spinlab as a researcher on 3D visualisation and for the research and development department of Geodan. Her main focuses at Geodan are 3D visualisation of large spatial areas and GIS for Secondary education. At the Vrije Universiteit, Irene is currently working on her Ph.D. on the influence of GIS on the increase of knowledge of secondary school geography students. This is being done within the EduGIS project (www.edugis.nl).

Prof. Dr. Ortwin Renn serves as full professor and chair of environmental sociology at Stuttgart University. He directs the Interdisciplinary Research Unit for Risk Governance and Sustainable Technology Development (ZIRN) at the University of Stuttgart and the non-profit company DIALOGIK, a research institute for the investigation of communication and participation processes in environmental policy making. Ortwin Renn has a doctoral degree in sociology and social psychology from the University of Cologne. He is a member of the panel on “Public Participation in Environmental Assessment and Decision Making” of the U.S. National Academy of Sciences in Washington, D.C., a member of the Berlin-Brandenburg Academy of Sciences, the German Academy for Technology and Engineering, and the European Academy of Science and Arts (Vienna and Salzburg). His honours include the “Distinguished Achievement Award” of the Society for Risk Analysis (SRA) and the Outstanding Publication Award from the Environment and Technology Section of the American Sociological Association for the book “Risk, Uncertainty and Rational Action” co-authored with C. Jaeger, G. Rosa und Th. Webler. Among his political activities is the chairmanship of the State Commission for Sustainable Development (German State of Baden-Württemberg). Renn is primarily interested in risk governance, political participation, and technology assessment. He has published more than 30 books and 200 articles.

Jorge Samaniego Rivera is a marine biologist. He has worked in environmental education as a staff member of the Machalilla National Park and the local authority of Puerto López, Ecuador. In this function he has worked as a counterpart of the German Development Service DED. He is currently an advisor in the Corporación de Manejo Forestal Sustentable (COMAFORS) in the province of Manabí, Ecuador.

Prof. Dr. Jürgen Scheffran is a senior research scientist with ACDIS at the University of Illinois at Urbana-Champaign, and has adjunct faculty positions at the Departments of Political Science and Atmospheric Sciences. After his Ph.D. in Physics at the University of Marburg in Germany, he worked as a researcher and assistant professor in the interdisciplinary research group IANUS and the mathematics department at the Technical University of Darmstadt. After a research project at Hamburg University, he joined the Potsdam Institute for Climate Impact Research in 2001, and in 2003 he was temporary Visiting Professor at the University of Paris (Pantheon/Sorbonne). His research and teaching interests include energy, environment and climate change; complex systems analysis and computer modeling; technology assessment, arms control and international security. Currently he is coordinating a research project on renewable energy and land use.

PD Dr. Susanne Stoll-Kleemann is an Associate Professor at the Humboldt University of Berlin and is trained in geography and social sciences. She leads the Research Group GoBi (Assessing Biodiversity Governance and Management Approaches). In this research project, together with her five Ph.D. and six Master's students, she investigates success and failure factors of protected area management and governance. Before this recent appointment, she was a senior researcher at the Potsdam Institute for Climate Impact Research (Department of Global Change and Social Systems). Susanne is an interdisciplinary social scientist focusing on human-environment relations, especially stakeholder dialogues. Her research interests are in the human dimensions of global environmental change and sustainability science. Susanne is the Vice-President of the German Society of Human Ecology.

Dr. Michael Sturm started his doctor's degree in Geography at the Technical University of Berlin on sustainable land-use in Monteverde, Costa Rica, finishing it at the Institute for Geography at the Humboldt University Berlin in 1995. He has worked as a National Park Manager for the German Development Service DED in the Machalilla National Park, Ecuador (1995 - 1997) and as a Project Manager of EXPO 2000, a world

exhibition project in north Germany, on Implementing Low and Renewable Energy Concepts (1999 - 2001). From the end of 2001 until the end of 2004 he worked as co-ordinator in a project in Flensburg, Germany on strategies of energy reduction in schools (based on the Eco Management and Audit Scheme EMAS). Currently he leads his own data management company, "Agentur Sturm", in Flensburg. He plans and realizes projects with environmental and infrastructural subject matters, among other things for people with activity limitations.

Joost van Uum graduated with a Master of Science degree in Tropical Civil Engineering and Water Management from the Wageningen University and Research Centre, the Netherlands. As a geo-adviser he has coordinated GIS projects at several governmental institutes. His expertise is in programming, implementing, and the use of GIS. As a teacher at Bureau Nieuwland, he coordinated educational GIS programs and gave GIS courses to civil engineering companies and government organizations. He is currently working at the Government Service for Land and Water Management as geo-adviser and program manager to coordinate the development of new initiatives in GIS.

Dr. Anne Cristina de la Vega-Leinert is an independent researcher on societal perception of climate change, environmental conflicts, the communication of scientific knowledge, social learning, and participatory research. She has an M.Sc. in Quaternary Sedimentology and Geomorphology (University College Dublin) and a Ph.D. in Holocene Coastal Environmental changes (Coventry University). At the Flood Hazard Research Center (London), her research focused on the impacts of accelerated sea-level rise and integrated coastal zone management. At the Potsdam Institute for Climate Impact Research (Germany), she worked as a scientific and stakeholder dialogue coordinator within the DINAS-COAST (<http://www.dinas-coast.net/>) and the ATEAM projects (<http://www.pik-potsdam.de/ateam/>). She is currently working in the GoBi project (<http://www.biodiversitygovernance.de/>), assessing success and failure factors in management of tropical biosphere reserves.

Rob van de Velde studied human geography at the Vrije Universiteit Amsterdam. He has worked as GIS-program manager at the National Physical Planning Agency and the National Institute of Public Health and Environment. He has undertaken applied research on various geo-information issues, such as spatial decision support systems, environmental assessments, and land-use policy scenarios. Currently, he leads the GIS Competence Centre at the Government Service for Land and

Water Management, an executive body of the Ministry of Agriculture, Nature and Food Quality. Since May 2003 he has been part of the Spinlab team of the Vrije Universiteit Amsterdam, where he focuses on research about spatial virtual environments and decision making.

Prof. Dr. Martin Welp serves as professor at the University of Applied Sciences Eberswalde (near Berlin) at the Faculty of Forestry. Before this recent appointment, he was a senior researcher at the Potsdam Institute for Climate Impact Research (Department of Global Change and Social Systems). He holds a Master's Degree in Forestry and a Ph.D. Degree in Agriculture. Martin has researched public participation and stakeholder dialogues in various fields of environmental management, including forest management, coastal management, river basin management, and protected area management. His current research activities focus on linking stakeholder involvement and computer-based modelling in global-change mitigation and adaptation. The European Climate Forum (ECF), which engages researchers, companies, NGOs and other actors in science-based stakeholder dialogues, provides a context and basis for his research on the practice and theory of dialogues.

Acknowledgements

The idea for this book was born after an ambitious workshop organized by the Centre for Environmental Research (UFZ) Halle-Leipzig. The session focussed on participatory methods and multicriteria analysis. During a discussion on the way back home, we concurred that the present literature on natural resources management does not adequately connect participatory approaches with some theories and new tools that in our view are highly relevant. This relates in particular to the new field of stakeholder dialogues and its theoretical underpinning.

Fortunately we were able to convince a few of our colleagues, some of whom were practitioners and some academics, to reflect on the art and practice of stakeholder dialogues. We thank all the authors of the present volume for sharing their specific knowledge, insights, and experiences in the articles. In particular, we are grateful to Prof. Ortwin Renn and Prof. Tim O’Riordan for their valuable observations in the introduction and epilogue.

The stakeholder task force at our former affiliation, the Potsdam Institute for Climate Impact Research, Department of Global Change and Social Systems, provided a valuable platform for new ideas. We would like to thank Prof. Carlo C. Jaeger (Head of Department), Dr. Anne C. de la Vega Leinert, and Antonella Battaglini for many intellectually challenging discussions. Exchanges with many other colleagues in Germany and abroad are also deeply appreciated, in particular those with Dr. Fritz Reusswig, Dr. Hermann Lotze-Campen, Dr. Jürgen Kropp, Prof. Bernhard Glaeser, Prof. Ludwig Ellenberg, Prof. Konrad Ott, Prof. Lenelis Kruse-Graumann, Dr. Marc Hockings, Dr. Irene Ring, Dr. Frank Wätzold, Prof. Uwe Jens Nagel, Prof. Eckart Ehlers, Prof. Craig ZumBrunnen, Monika Bertzky, and Prof. Klaus Hasselmann.

The European Climate Forum provided a platform for dialogue and the interchange of ideas with stakeholders representing companies, NGOs, and policymakers. The German Society for Human Ecology was a valuable academic forum that gave us opportunities to discuss matters dealt with in this book with other colleagues.

We are grateful to the Robert Bosch Stiftung for supporting the production of our work. Marion Mehring did a marvellous job of editing and proofreading the chapters, and we thank Joe Greenman for reviewing the linguistic content of the working draft. The responsibility for the final version lies solely with us.

Finally, we are extremely thankful for the support and patience of our respective partners, Heinz Kleemann and Esther Hoffmann, during the writing and editing process (in particular on weekends). The book is dedicated to our daughters, Luisa and Elina. Both were born in the midst of the genesis of the book.

Susanne Stoll-Kleemann

Martin Welp