Global Sustainability

The Impact of Local Cultures

A New Perspective for Science and Engineering, Economics and Politics

Edited by Peter A. Wilderer, Edward D. Schroeder, Horst Kopp



WILEY-VCH Verlag GmbH & Co. KGaA

Global Sustainability

Edited by P. A. Wilderer, E. D. Schroeder, H. Kopp

Further Titles of Interest

A. Azapagic, R. Clift, S. Perdan (Eds.)

Sustainable Development in Practice Case Studies for Engineers and Scientists

2004 ISBN 0-470-85608-4

C. Phillips

Sustainable Place A Place of Sustainable Development

2003 ISBN 0-470-84740-9

Sustainable Development

4 issues per year ISSN 0968-0802

Global Sustainability

The Impact of Local Cultures

A New Perspective for Science and Engineering, Economics and Politics

Edited by Peter A. Wilderer, Edward D. Schroeder, Horst Kopp



WILEY-VCH Verlag GmbH & Co. KGaA

Edited by

Prof. i. R. Dr.-Ing. Dr. h. c. Peter A. Wilderer

Institute of Advanced Studies on Sustainability European Academy of Sciences and Arts c/o Technical University Munich Lehrstuhl für Wassergütewirtschaft Arcisstraße 21 80333 München Germany peter@wilderer.de

Prof. Dr. Edward D. Schroeder

University of California Department of Civil & Environmental Engineering 1 Shields Avenue Davis, CA 95616 USA

Prof. Dr. Horst Kopp

Friedrich-Alexander-Universität Institut für Geographie Kochstr. 4/4 91054 Erlangen Germany All books published by Wiley-VCH are carefully produced. Nevertheless, authors, editors, and publisher do not warrant the information contained in these books, including this book, to be free of errors. Readers are advised to keep in mind that statements, data, illustrations, procedural details or other items may inadvertently be inaccurate.

Library of Congress Card No.: Applied for

British Library Cataloging-in-Publication Data: A catalogue record for this book is available from the British Library.

Bibliographic information published by

Die Deutsche Bibliothek Die Deutsche Bibliothek lists this publication in the Deutsche Nationalbibliografie; detailed bibliographic data is available in the internet at http://dnb.ddb.de.

© 2005 Wiley-VCH Verlag GmbH & Co. KGaA, Weinheim

All rights reserved (including those of translation in other languages). No part of this book may be reproduced in any form – by photoprinting, microfilm, or any other means – nor transmitted or translated into a machine language without written permission from the publishers. Registered names, trademarks, etc. used in this book, even when not specifically marked as such, are not to be considered unprotected by law.

Printed in the Federal Republic of Germany. Printed on acid-free paper.

 Cover Design
 SCHULZ Grafik-Design, Fußgönheim

 Typesetting
 Manuela Treindl, Laaber

 Printing
 betz-druck gmbh, Darmstadt

 Bookbinding
 Litges & Dopf Buchbinderei GmbH,

 Heppenheim
 Kather

ISBN 3-527-31236-6

Table of Contents

Preface		.XI
List of Co	ontributorsX	Ш
Key Note	Address	1
1	History and Mandate of Sustainability:	
	From Local Forestry to Global Policy	5
1.1	Sustainability: Key Word in the Today's Policy Discussion	5
1.2	History and Definitions of "Sustainability"	6
1.2.1	Development of the Technical Terminus in Forestry	6
1.2.2	Application in Environmental Politics	7
1.2.3	The Definition of "Sustainability" – A Social Negotiation Process on	9
1.3	Experiences from Forestry and Transfer into other Economic Fields –	10
1 2 1	Possibilities and Limits	.10
1.3.1	Peculiarities of Forest Ecosystems and Forest Management	.15
1.3.2	Concept of Industrial Ecology	.14
1.3.3	Limits in Transferring the Forestry Model to other Economic Sectors	.15
1.3.4	Approximation to the ideal "Sustainability"	.10
1.4		.1/
	Acknowledgement	.18
	References	.18
2	Sustainable Development:	
	Exploring the Cross-Cultural Dimension	.21
2.1	Introduction	.22
2.2	Perspectives on Sustainable Development	.25
2.3	Prerequisites for Sustainable Development	.29
2.4	Sustainability: Essentials for a Realistic Cross-Cultural Concept	.31
2.5	Qualitative Growth as a Prerequisite for Sustainable Development	.35
2.6	Outlook	.38
	References	.39
3	Sustainable Development and Cultural Diversity	.43
3.1	Introduction	.43
3.2	The Vertical vs. Horizontal Dimension of Sustainability	.45
3.3	The Relevance of Cultural Diversity	.46
3.4	Globalization and Cultural Diversity	.47
3.5	Agricultural Sector	.47
3.6	Media Industry	.48

3.7	Tourism	49
3.8	Conclusion	50
	References	51
4	Technological Progress in Different Cultures and Periods:	
	Historical Evolution Projected into the Future	53
4.1	Introduction	53
4.2	Historical Perspective	54
4.2.1	Why and Where Technological Progress?	54
4.2.2	Religious and Secular Approaches	54
4.2.3	Perception of Nature as an Obstacle to Technical Progress	55
4.2.4	Enlightenment: A Step towards Modern Times	56
4.3	Modernity and the Sustainability Concept	57
4.3.1	The Twentieth Century	57
4.3.2	The Twenty-first Century	59
4.4	In Search of a Coherent Evolution of Technology: Past and Future	60
4.5	Conclusions	63
	References	63
5	Views of Sustainability: Floments of a Synthesis	65
5	Introduction	
5.1	Definitions	
5.21	The West Version	
522	The Strong Version	
522	Alternative Views and Discussion	68
5.2.5	Alternative views and Discussion	
5.5	The Hartwick Solow Pule	
5.4	Substitutability and the Dala of Tashnical Dragrass	12
5.5	Substitutability and the Kole of Technical Flogress	
5.0	Catastrophe Folins	
5./	Summary Classification of Economic Models	
5.8	Discount Kate	
5.9	Discussion	80
	Kelerences	83
6	A New Way of Thinking about Sustainability,	
	Risk and Environmental Decision-Making	87
6.1	Introduction	87
6.2	Complicated Technology vs. Complex Technology	88
6.3	Errors in Thinking and Attitudes	89
6.4	The Current View of Sustainability and Risk Analysis	90
6.5	A New View of Sustainability	91
6.6	An Expanded View of Risk	91
6.7	An Expanded Process of Environmental Decision Making	92
6.8	Conclusions	93
	References	

7	Humility and Establishing the Sustainable Environment	95
7.1	Introduction	95
7.2	Pristine Environments and Preservation	99
7.3	Specieism	102
7.4	Where Do We Go/How Do We Get There?	103
7.5	Conclusions	105
	Acknowledgment	105
	References	105
8	Conflicts and Conflict-solving as Chances to Make the Concept	
	of Sustainable Development Work	107
8.1	Sustainability as a Conflict-generating Vision	107
8.2	Approaches to Conflict Resolution	111
8.3	The Integrative Concept of Sustainable Development as a Framework	
	for Cultural Conflict Resolution	114
8.3.1	The Integrative Concept – An Overview	114
8.3.2	Conclusions Drawn for Cultural Conflict Management	117
8.4	Research Perspectives	119
8.5	Summary	120
	References	121
9	Sustainability through Science-Technology-Society Education	123
9.1	Introduction	123
9.2	What is Science-Technology-Society Education?	123
9.2.1	STS and Sustainability	124
9.3	Sample Educational Topics Involving the Everglades	125
9.3.1	A Sample Instructional Activity	126
9.4	Issues	127
9.5	Summary and Implications	128
	References	129
10	Sustainability and Consumption of Raw Materials in Germany	131
10.1	Religion and Sustainability are in Great Demand	131
10.1.1	Why do We Not Use the Knowledge of the Ancients?	132
10.1.2	The Present Economic Trends and Ecological Effects	133
10.1.3	The Prices Do Not Say Ecological Truth	134
10.1.4	Existence of the Possibility to Decouple Economic Growth from the	
	Ecologic Destruction?	134
10.1.5	Sustainability as a Survival Strategy	136
10.1.6	Worldwide Interlacing Will Make our Prosperity Safe	137
10.2	Conclusions	138
	References	140

VIII Table of Contents

11	Sustainability, Culture and Regional Scales:		
	Some Remarks from Human Geography	141	
	References	145	
12	Sustainable Development in Asia:		
	Traditional Ideas and Irreversible Processes	147	
12.1	Introduction	147	
12.2	Population Growth as a Major Challenge to Sustainable Developmen	t148	
12.3	Traditional Ideas of Sustainability and the Technocratic Ambitions		
	of Modern Governments	149	
12.4	Sustainable Societies in Asia		
12.5	Conclusions	154	
	References	155	
13	Sustainability of Development and Valuation of Non-renewable		
	Resources: An Analysis in the Context of Local Cultures	157	
13.1	Introduction	157	
13.2	Sustainability in the Context of Economics of Ecology	158	
13.3	Energy Options and Sustainable Development in the Developing		
	World	164	
13.4	Cultural Norms and Concerns for Sustainability in Formulating		
	Development Strategy by National and International Agencies	165	
13.5	Conclusions	167	
	References	168	
14	Sustainability in Latin American Countries:		
	Challenge and Opportunities for Argentina	171	
14.1	Introduction	171	
14.2	Core Areas for Sustainable Development	172	
14.3	What are the Consequences?	176	
14.4	Where Should We Go: Evolution and Tendency?	178	
14.5	How Do We Get There: Driving Forces?	179	
14.6	Eco-Efficiency Production	180	
14.7	Joining Efforts to Sustainable Development	181	
14.8	Some Cases from Argentina		
14.9	Conclusions	183	
	References	184	
15	On the Roles Engineers May Play in the Attempt		
	to Meet Basic Demands of Man and Nature		
15.1	Millennium Development Goals		
15.2	Engineers and Sustainability		
15.3	Design of Technology in a Globalizing World		
15.3.1	The Cultural Dimension	191	
15.3.2	The Global Dimension	193	

15.3.3	Synthesis	195
15.4	Urgent Questions to be Answered	197
15.5	Conclusions	198
	References	199
16	Integrating Cultural Aspects in the Implementation	
	of Large Water Projects	201
16.1	General Conditions	202
16.2	Agenda 21 and Integrated Water Resources Management as a Steering Model	204
16.3	Parameters of Success Under the Aspect of "Implicit Culture"	206
16.4	Success Components According to the TTW-Model	208
16.5	Appropriate Technology	208
16.6	Management	209
16.7	Personalities	212
16.8	Idea of the Implementation of Cultural Strength as an "Explicit	
	Cultural Aim"	214
16.9	Integral Planning	214
16.10	Integral Redevelopment Models	215
16.11	Conclusion: Systematic Implementation of Cultural Values as Project	
	Assets	218
	References	219
17	Sustainability from an Entrepreneurial Point of View	
	Seen from the Particular Standpoint of a Company Active	
	in the Water Industry	221
17.1	Introduction	221
17.2	Role of Industry in Pursuing Sustainable Development	222
17.3	Some Remarks about Water Industry	224
17.4	Water Technology Considerations	225
	References	226
18	Synthesis	227
18.1	Sustainability and Sustainable Development	227
18.2	Postulates	231
	References	231
Index		233

Preface

In the year 2000, the European Academy of Sciences and Arts (EASA) in collaboration with the Bavarian Research Centers BayFORREST and FORAREA started a series of workshops to explore, by means of a cross-disciplinary and inter-cultural discourse, the interrelationships between technological advances, cultural heritage and religious concerns. The aim of these workshops was to assist in the enforcement of the general Sustainability Development (SD) guidelines, and in the realization of the Millennium Development Goals (MDG) of the United Nations. The basic question underlying the discussions was: What can scientists, and what can engineers do to turn words into action?

Development of technology readily acceptable by people living under the cultural, ecological and economical conditions specific to the very geographical area is assumed to be highly important. To be able to implement sustainable development measures people need to have ready access to fresh air, clean water and safe food in sufficiently high quantity. Pollution of atmosphere, soil and natural water bodies must be prevented or mitigated to provide and maintain sound living conditions for present and future generations. Education must be made accessible for all people irrespectively of gender, social status and wealth, and irrespectively of the local conditions under which people use to live, conditions prevailing in a metropolitan or a rural area in Europe, in Asia, Latin America, Africa or wherever. It appears that one cannot be achieved without achieving the other: Winning the Millennium Development Goals is a prerequisite of making progress in sustainable development.

The workshops were organized to address those needs, and to make clear that crosscultural and cross-disciplinary approaches are required to satisfy basic requirements of man and nature. The first of these workshops was held on October 28 and 29, 2000 at the Wildbad-Kreuth resort in the heart of the Bavarian Alps. The second workshop took place at the monastery "Kloster Banz", located in the North of Bavaria, Germany, on February 24 and 25, 2003.

36 scientists, engineers and entrepreneurs from 4 continents and 12 countries attended the workshop at Kloster Banz. Prior to the meeting overview articles were produced by 14 of the participants, and distributed among the attendees. With this information background an intensive dialogue began immediately. Except of two short introductory speeches, formal oral presentations were not given. At the beginning of the discussion session the various aspects of sustainability and sustainable development, culture and cultural diversity, needs and desiderates were discussed from a more general perspective. It was decided to focus during the further discussion on four specific areas:

- A: World cultures and world religions
- B: Poverty and economical development
- C: Global and temporal dimension of sustainability
- D: Technology, conflict and sustainability

XII Preface

In the following session, the participants split into four groups and discussed these topics thoroughly. The conclusions drawn were then presented to the plenum during the following session and finally summarized. It was also decided to write, as a joint effort, a book focusing on the cultural dimension of sustainable development, based on the abstracts formerly produced by various participants. This book is the result of the workshop and many bilateral discussions held afterwards.

September 2004

Peter A. Wilderer Edward D. Schroeder Horst Kopp

List of Contributors



Josef Bugl is Dean of the Class Technical and Environmental Sciences of the European Academy of Sciences and Arts. Between 1960–1972 he has held several research positions with Euratom. From 1973–1992 he has served as director with BBC Mannheim, responsible for developments in nuclear technology. From 1980–1987 member of the German Bundestag, spokesman for R and D of the Christian Democrats' caucus and chairman of the enquiry commission for technology assessment. He has been the initiator of the Academy for Technology Assessment in Stuttgart and chairman of the advisory board. From 1990–1998 honorary professor for technology assessment and environment at the Technical University of Chemnitz. Member of several boards and advisory committees.

Contact: Prof. Dr. Josef Bugl Elisabeth von Thadden Str. 7 68163 Mannheim Germany josefbugl@aol.com



Martin Faulstich became professor of waste management at the Technische Universitaet Muenchen in Garching. Since 2000 he is member and since 2001 chairman of the executive board of ATZ Development Center in Sulzbach-Rosenberg which is engaged in processes and materials for energy systems. Since 2003 he is also director of the new Institute of Technology of Biogenic Resources at the Technische Universitaet Muenchen in Straubing. In addition he serves as chairman of BayFORREST Bavarian Research Network on Waste Management, editor of the journal Wasser & Abfall, and member of numerous professional committees.

Contact:

Prof. Dr. Martin Faulstich Institute of Technology for Biogenic Resources Technical University of Munich Am Hochanger 13 85354 Freising Germany <u>m.faulstich@bv.tum.de</u>



Martin G. Grambow is civil engineer and executive officer in the Bavarian administration. He is head of the section for Water Management in Rural Areas and Torrents in the Bavarian Ministry of Environment, Health and Consumer Protection. In 1999 he founded in Hof the Bavarian office for Technology Transfer Water and supports as senior advisor projects in the water sector in East Europe, Asia, South America and North Africa. He is Vice President of the International Research Society Interpraevent and member of the Bavarian Academy "Ländlicher Raum" (Rural Areas) in Munich.

Contact:

Dipl.-Ing. Martin G. Grambow Bavarian State Ministry of Environment Health and Consumer Protection Rosenkavalierplatz 2 81925 Munich Germany martin.grambow@stmugv.bayern.de



Armin Grunwald is director of the institute for Technology Assessment and systems analysis (ITAS) at the research centre Karlsruhe and professor at Freiburg University since 1999. Since 2002, he is also director of the Office of Technology Assessment at the German Bundestag (TAB). Since 2003, in addition, he is speaker of the Helmholtz programme "Sustainable Development and Technology". By education, Armin Grunwald is physicist and philosopher. His current working areas are theory and methodology of technology assessment, philosophy of technology, philosophy of science, and approaches to sustainable development.

Contact:

Prof. Dr. Armin Grunwald Institute for Technology Assessment and Systems Analysis (ITAS) Research Centre Karlsruhe Hermann-von-Helmholtz-Platz 1 76344 Eggenstein-Leopoldshafen Germany grunwald@itas.fzk.de



Michael von Hauff is Professer for International and Environment Economics at the University of Kaiserslautern/Germany since 1991. Before he was associated with the University of Stuttgart. He was a Visiting Professor at the University of Delhi. He is a member of many national and international research associations like the European Academy of Sciences and Arts. His main fields of research concentrate on problems of development and environment economics.

Contact:

Prof. Dr. Michael von Hauff University of Kaiserslautern Gottlieb Daimler Str. 42/404 67663 Kaiserslautern Germany <u>hauff@wiwi.uni-kl.de</u>



Gloria Hauser-Kastenberg is a litigation attorney and mediator: Instructor at UC Berkeley. Ms. Hauser-Kastenberg received her B.A. from Temple University and her J.D, from Southwestern School of Law. She is a litigation attorney and mediator handling a wide range of cases primarily in the following areas: toxic tort and environmental issues, workplace and discrimination issues and professional malpractice cases. Since 1998, her practice has focused on mediation in private practice and in affiliation with several Bar Associations in the San Francisco Bay Area and the San Francisco Superior Court Civil Mediation Panel. She has worked as a facilitator, trainer and consultant with the Center for Changing Systems, a Bay Area nonprofit organization and consulting company which teaches and utilizes a non-linear and systems approach for decision-making and communication. She has taught dispute resolution skills at UCLA and is currently at UC Berkeley jointly teaching "Ethics and the Impact of Technology on Society" with her husband Professor Kastenberg.

Contact: Gloria Hauser-Kastenberg 1678 Shattuck Avenue 311 Berkeley, CA 94708 USA <u>ghauser@igc.org</u>

XVI List of Contributors



Hans Georg Huber heads a technology corporation which is located in Germany and which, based on many years of tradition, has focused on the treatment of sewage and drinking water. The development of modern and forward-looking technologies corresponding to the requirements of high performance and cost effectiveness on the one hand and being tailored to the demands of international target markets on the other hand, has always been considered as a primary task. This also includes that financial feasibility, easiness of operation, ecological compatibility and economic practicability are taken into consideration. In the light of these aspects, solutions have been elaborated, developed and made available throughout the world.

Contact: Dipl.-Ing. Hans Georg Huber Hans Huber AG Industriepark Erasbach A1 92334 Berching Germany hgh@huber.de



William E. Kastenberg is currently the Daniel M. Tellep Distinguished Professor of Engineering at the University of California, Berkeley. Dr Kastenberg is a member of the U.S. National Academy of Engineering, and is a Fellow of the American Association for the Advancement of Science and the American Nuclear Society. He has won distinguished teaching awards from the American Society for Engineering Education, and the Engineering Graduate Students' Association at UCLA. His teaching and research interests are in the areas of risk assessment and risk management for complex technologies, nuclear reactor safety, environmental risk analysis, and more recently, the study of ethics and the impact of technology on society.

Contact: Prof. Dr. William E. Kastenberg 4103 Etcheverry Hall University of California at Berkeley Berkeley, CA 94720 USA <u>kastenbe@nuc.berkeley.edu</u> *His Royal Highness Prince El Hassan bin Talal, President of the Club of Rome, Moderator of the World Conference for Religions and Peace, Chairman of the Arab Thought Forum*





Horst Kopp is head of the Department of Geography in the University Erlangen-Nuremberg where he holds the chair for Human Geography and Middle East Research. Besides he was chairman of the Bavarian Research Network FORAREA between 1995 and 2002 (research on area, business and culture). He serves as the editor of Jemen-Studien and other journals and he belongs the editorial board of Arab World Geographer.

Contact: Prof. Dr. Horst Kopp Institute for Geography Kochstr. 4/4 91054 Erlangen Germany hkopp@geographie.uni-erlangen.de David Devraj Kumar is Professor of Science Education at Florida Atlantic University. His research involves Science-Technology-Society studies, evaluation and policy. He has directed several funded projects including a national level status study of STS in all fifty states in the United States. He is co-editor of the book Science, Technology, and Society: A Sourcebook on Research and Practice (New York: Kluwer Academic/Plenum Publishers). He serves on the editorial boards of the Journal of Science Education and Technology, and the Review of Policy Research. Professor Kumar is a Fellow of the American Institute of Chemists.

Contact: Prof. Dr. David Devraj Kumar Florida Atlantic University College of Education 2912 College Avenue Davie, FL 33314 USA <u>david@fau.edu</u>



Amitabh Kundu is currently Professor of Economics at Jawaharlal Nehru University, New Delhi. He has done Post Doctoral work as a Senior Fulbright Fellow at the University of Pennsylvania. He has been a Visiting Professor at University of Amsterdam, Maison des Sciences de L'homme, Paris, University of Kaiserslautern and South Asian Institute Heidelberg, Germany. He has done International Consultancies for UNDP, UNESCO, UNCHS, ILO, Government of Netherlands, University of Toronto, Sasakawa Foundation etc. He has worked as Director at various institutes such as National Institute of Urban Affairs, Indian Council of Social Science research and Gujarat Institute of Development Research. Currently he is in the Editorial Board of Manpower Journal, Urban India, Journal of Educational Planning and Administration, Indian Journal of Labour Economics. He has about twenty books and two hundred research articles, published in India and abroad, to his credit. His recent books (edited) are "Inequality, Mobility and Urbanisation: China and India", "Informal Sector in India" and "Poverty and Vulnerability in a Globalising Metropolis: Ahmedabad".

Contact:

Prof. Dr. Amitabh Kundu Jawaharlal Nehru University Center of Studies of Regional Development New Delhi 67 India amit0304@mail.jnv.ac.in



Dimitris Kyriakou holds a Bachelor of Science degree in electrical engineering & computer science, as well as Master's and Ph. D. degrees (dissertation on international economics issues) all from Princeton University. He works at the European Commission's Institute for Prospective Technological Studies, where his main tasks include those of the editor of the Institute's technoeconomic review, The IPTS REPORT, as well as those of the Institute's chief economist.

Contact:

Dr. Dimitris Kyriakou Institute for Prospective Technological Studies Joint Research Centre European Commission c/Inca Garcilaso s/n Edf. EXPO 41092 Seville Spain dimitris.kyriakou@cec.eu.int



Hartmann Liebetruth is professor of Managerial Economics at the Department of Print and Media Technologies at the University of Wuppertal. Since 1994 he is also the chairman of the »International Circle of Educational Institutes for Graphic Arts – Technology and Management«. He is holding regularly international seminars and workshops on developing new strategies for the print and media industry in its process of transition from a manufacturing to a service providing industry and was the co-author of the study »Future of Print & Publishing – Opportunities in the Media Economy of the 21st Century«.

Contact:

Prof. Dr. Hartmann Liebetruth Bergische University of Wuppertal Department of Print & Media Technology Rainer Gruenter Str. 21 42119 Wuppertal Germany liebetruth@kommtech.uni-wuppertal.de



Reinhard M. Mosandl is the Head of the Chair of Silviculture and Forest Management at the Technische Universität München. In Germany his research activities are focused on natural regeneration in mixed mountain forests and on conversion of pure stands into mixed stands. On the international level he has supervised many PhD-theses aimed at sustainable management of natural forests. As chairman of the Section Silviculture within the German Association of Forest Research Organisations he has initiated several common research projects and publications. In addition to his scientific activities he is responsible for the management of the university forest where he combines scientific knowledge with practical experience.

Contact:

Prof. Dr. Reinhard Mosandl Chair of Silviculture and Forest Management Technical University of Munich Am Hochanger 13 85354 Freising Germany mosandl@wbfe.forst.tu-muenchen.de



David Norris has for more than 25 years worked as an international educator, consultant, facilitator and coach in the United States, Canada, Australia, Europe, India and the Middle East. In 1967 he was awarded a Fulbright Fellowship to study Comparative Literature at the Free University of Berlin, He received his doctorate from Columbia University in New York City, later becoming a member of that faculty and then an Assistant Professor of Literature at City College of New York. Shifting from the academic to the business world, since 1979 he has been working with individual managers and project teams, in both English and German, to design and implement organizational cultures that provide a basis for non-linear thinking resulting in fundamental systems change. Currently he is developing and implementing a new understanding of risk perception in corporate culture.

Contact: Dr. David Norris Allmendsberg 27 79348 Freiamt Germany <u>dnorris@t-online.de</u>



Ortwin Renn is Professor of Environmental Sociology at the University of Stuttgart and Director of the non-profit company DIALOGIK, a research institute for the investigation of communication and participation processes in environmental policy making. He also chairs the European Center for Interdisciplinary Risk Research, Governance and Sustainable Technology, a research unit within the University of Stuttgart. From 1993 to 2003, he directed the Center of Technology Assessment in Stuttgart, Germany, a public foundation devoted to the study of the societal impacts of technological and social change. He has conducted a large number of research projects on risk perception, risk management, environmental policy analysis, conflict resolution, technology assessment, and energy planning. His current research includes environmental economics and sociology, risk perception, risk analysis and risk communication, regional concepts of sustainable development, citizen participation in risk management, attitudes towards technology, and social movements.

Contact: Prof. Dr. Ortwin Renn University of Stuttgart Department of Sociology II Seidenstr. 36 70174 Stuttgart Germany ortwin.renn@soz.uni-stuttgart.de



Monica I. Renner works as Professor of Administration at the Economic Science School of the University of Buenos Aires, Argentina, since 1988. She is in charge of the Center of Scientific and Technical Studies (C.E.C.y T.), acts as evaluator since 1994 for the Argentine National Quality Award and has authored various books and over 100 articles published. On invitation of the German Academic Exchange Service she visited the environmental management groups at the Cologne University and at the TU Munich. In 2003 she spent some time at the University of Queensland, Australia, as a visiting professor.

Contact: Prof. Dr. Monica Renner University of Buenos Aires Ada Elflein 3761 11A (B1637 AMG) Buenos Aires Argentina <u>monicarenner@yahoo.com</u>

XXII List of Contributors



Dietmar Rothermund is Professor emeritus of South Asian History, South Asia Institute of Heidelberg University. He is a Fellow of the Royal Historical Society, London, and Chairman, European Association of South Asian Studies. His major publications in English are Government, Landlord and Peasant in India (1978), Mahatma Gandhi. An Essay in Political Biography (1991), India in the Great Depression, 1929–1939 (1992), An Economic History of India (2nd rev.ed. 1993), The Global Impact of the Great Depression, 1929–1939 (1996), (with Hermann Kulke) A History of India (4th rev.ed. 2004).

Contact: Prof. Dr. Dietmar Rothermund Oberer Burggarten 2 69221 Dossenheim Germany dietmar.rothermund@t-online.de



Werner Schenkel held various leading positions at the German Environmental Agency since this institution was founded in 1974. First, he directed the division of water and wastewater management. Later he was in charge of the department of observation and assessment of the environment, and finally of the department of sanitation, ecology, water, soil and air. In 2003, he retired from his position but is still active as a senior advisor. He authored and coauthored more than 20 publications and serves as editor of a handbook on waste management.

Contact: Prof. Dr. Werner Schenkel Franklinstr. 1 10587 Berlin werner.schenkel@gmx.de



Edward D. Schroeder is Professor Emeritus of Civil and Environmental Engineering at the University of California, Davis where he has been a member of the faculty since 1966. Professor Schroeder specializes in biological process engineering and has contributed to the understanding of kinetics and stoichiometry of both liquid and vapor phase treatment systems. He has authored or coauthored over 150 publications and three books on wastewater treatment, waste gas treatment, and water quality.

Contact:

Prof. Dr. Edward Schroeder Department of Civil & Environmental Engineering University of California 1 Shields Avenue Davis, CA 95616 USA edschroeder@ucdavis.edu



Gabriele Weber-Blaschke is researcher and lecturer at the Institute of Technology of Biogenic Resources at the Technische Universität München, Germany. After studying forest science and environmental engineering she made her PhD in forest science and worked as forest engineer in state and private forests. Back at the University she is performing projects involving sustainability, interdisciplinary and international cooperation and is teaching courses about waste and resource management. She published around 40 national and international papers in the fields of sustainable forest and resource management. Her main research interests are focused on forest and industrial ecology, management of material flows and indicator systems for sustainability.

Contact: Dr. Garbiele Weber-Blaschke Institute of Technology for Biogenic Resources Technical University of Munich Alte Akademie 10 85354 Freising Germany gabriele.weber-blaschke@wzw.tum.de

XXIV List of Contributors



Raoul Weiler is engineer in Chemistry and Agro-industries and doctor in Applied Biological Sciences (1966) of the University of Leuven, Belgium. Before joining the chemical industry in 1970, he was a postdoctoral fellow at the University of North Carolina at Chapel Hill, the Catholic University of America, Washington DC and of the Centre National de la Recherche Scientifique, Paris, at the Université Paris V. In 1989 he was elected president of the Royal Flemish Engineers Association (K VIV) and founded a Working Party on Science, Technology and Society. At present he holds a teaching position at the University of Leuven, dealing with the relationship between technology and society. In 1997 he joined the Club of Rome of which he is now a member of the Executive Committee and is co-founder and President of the Brussels-EU Chapter.

Contact: Prof. Dr. Raoul Weiler Prins Boudewijnlaan 113 2610 Antwerp Belgium raoul.weiler@skynet.be



Mirka Wilderer works as a trainee of the Siemens AG working in the field of Power Transmission and Distribution. After studying Sociology in Regensburg, Germany, and Prague, Czech Republic, she graduated from the University of Bamberg, Germany in 2004, specializing in "European Integration and Global Society" and "International Management". Additionally, she completed the program of the Bavarian Elite Academy.

Contact: Mirka Wilderer Moosweg 5 83727 Schliersee Germany <u>mirka@wilderer.de</u>