

Making sense of research for sustainable land management

Hanspeter Liniger, Rima Mekdaschi Studer, Peter Moll, Ute Zander

Leihgabe der
Senckenberg Gesellschaft
für Naturforschung

~~WOCAT~~

peter
moll &
ute
zander


 SUSTAINABLE
LAND MANAGEMENT
LUES

 UNCCD
United Nations Convention
to Combat Desertification

u^b
UNIVERSITÄT
BERN
CDE
CENTRE FOR DEVELOPMENT
AND ENVIRONMENT

 HELMHOLTZ
CENTRE FOR
ENVIRONMENTAL
RESEARCH – UFZ

SPONSORED BY THE

 Federal Ministry
of Education
and Research

 FONA
research for Sustainable
development
BMBF

Table of contents

Foreword	5
Contributing authors	6
Preface	9
Introduction	10

PART 1	Research evidence in support of sustainable land management	16
---------------	--	-----------

CHAPTER 1	Local land management – the soil, vegetation, water and climate nexus	18
------------------	--	-----------

1.1	Integrated management of agricultural production systems	19
1.2	Managing irrigation and fertilization	32
1.3	Eco-engineering	37
1.4	Adapted livestock management	39
1.5	Managing natural and semi-natural systems	42

Conclusions	46
--------------------	-----------

CHAPTER 2	Landscape management – adapting to climate change	48
------------------	--	-----------

2.1	Land and water management in river basins	50
2.2	Riparian forest and water quality management	63
2.3	Coastal zone management and ECO-DRR	70

Conclusions	74
--------------------	-----------

CHAPTER 3	Mitigating climate change	76
------------------	----------------------------------	-----------

3.1	Developing nationwide strategies for climate change mitigation	79
3.2	Preventing land conversion	82
3.3	Reversing land conversion	85
3.4	Restoring wetlands and organic soils	86
3.5	Reducing emissions from agricultural practices	87

Conclusions	89
--------------------	-----------

CHAPTER 4	Protecting biodiversity and ecosystems	90
------------------	---	-----------

4.1	Managing protected areas	92
4.2	Paying for ecosystem services	96

Conclusions	100
--------------------	------------

CHAPTER 5	Bridging gaps between research and practice	102
	5.1 Awareness-raising: communicating complexity	104
	5.2 Capacity building	108
	5.3 Framework conditions and governance	111
	5.4 Use of Knowledge	114
	5.5 Stakeholder integration / co-production of knowledge	118
	Conclusions	126
CHAPTER 6	The contribution of research	128
	6.1 Tools and methods: the ways and means of conducting research	130
	6.2 Impact – the role of research projects within the region and beyond	138
	6.3 Framework conditions for implementation-oriented research: flexible and long-term	142
	Conclusions	143
CHAPTER 7	Conclusions and key messages	144
	The basis of land management	145
	Sustainable Land Management and the role of research	146
	Synergies and trade-offs in SLM	146
	Implementation-oriented research	148
	Framework conditions for implementation-oriented research	149
	Framework conditions for SLM implementation	150
	Outlook	151
PART 2	Case studies	154
ANNEX	BMBF-SLM Programme and the regional research projects	280
	References and supporting material	294
	Glossary of terms	301
	List of abbreviations	303