## **Table of contents**

	Acknowledgements	8
	Foreword	9
	Introduction	11
1	Executive Summary	13
2	Contribution of drylands to climate change	21
	Carbon dioxide and other greenhouse gas emissions from drylands The role of land use and land-use change in local and	22
	regional climate change	26
	2.2.1 Drivers of climate change in Africa's drylands	29
3	Climate change in dryland regions	33
3.1	Recent climate change	35
	3.1.1 Global scale	35
	3.1.2 Africa	36
	3.1.3 Asia	38
	<ul><li>3.1.3 Asia</li><li>3.1.4 Central and South America</li></ul>	38 39
3.2		
3.2	3.1.4 Central and South America	39
3.2	3.1.4 Central and South America Climate projections	39 39
3.2	3.1.4 Central and South America Climate projections 3.2.1 Global scale	39 39 40



4	Impacts of climate change on drylands	53
4.1	Climate change – an additional pressure	54
4.2	Drylands – particularly vulnerable to the adverse effects	
	of climate change	56
4.3	Impacts of climate change on desertification	59
4.4	Impacts of climate change on dryland ecosystems and biodiversity	60
4.5	Impacts of climate change on freshwater resources in drylands	63
	4.5.1 Global scale	63
	4.5.2 Africa	63
	4.5.3 Asia	64
	4.5.4 Central and South America	66
4.6	Impacts of climate change on agriculture	66
	4.6.1 Global scale	66
	4.6.2 Africa	72
	4.6.3 Asia	80
	4.6.4 Central and South America	81
5	Climate-change mitigation through sustainable	
	land management	83
5.1	What does mitigation of climate change mean?	85
	Challenges for mitigation of climate change	87
	Mitigation potential and options in forestry	91
	5.3.1 Reducing emissions from deforestation and forest degradation	
	(REDD) – an option for more investment in drylands?	94
5.4	Mitigation potential and options in agriculture	100
	Carbon sequestration in drylands	104
	5.5.1 Mitigation practices for carbon sequestration in drylands	108
	Improved cropland management	109
	Improved grazing land management	117
	Restoration of degraded lands	120
	Erosion management	121
	Reclamation of salt-affected soils	121
	Land-use change, afforestation, agroforestry	122
	<del>-</del>	130
	Bioenergy	130 132
5.6	Bioenergy 5.5.2 Co-benefits of carbon sequestration in drylands	
5.6	Bioenergy 5.5.2 Co-benefits of carbon sequestration in drylands Carbon finance in the AFOLU sector	132
5.6	Bioenergy 5.5.2 Co-benefits of carbon sequestration in drylands Carbon finance in the AFOLU sector 5.6.1 Clean Development Mechanism (CDM)	132 135
5.6	Bioenergy 5.5.2 Co-benefits of carbon sequestration in drylands Carbon finance in the AFOLU sector	132 135 135

6	Adaptation to climate change	143
	What does adaptation to climate change mean?	145
	Challenges for adaptation	147
6.3	Adaptation to climate change and sustainable development	149
	6.3.1 How are they interrelated?	149
	6.3.2 Integration of adaptation to climate change into development policies	151
6.4	Adaptation to climate change in drylands	157
	6.4.1 Building on local and traditional knowledge	168
	6.4.2 Developing and applying new measures –	
	'Climate insurance' as a form of risk management	170
	6.4.3 Overcoming the 'convention egoism':	
	a challenge for effective adaptation in drylands	172
6.5	Financing adaptation	175
	6.5.1 Official Development Assistance (ODA)	175
	6.5.2 The Adaptation Fund	176
	6.5.3 GEF adaptation funds	179
	Least Developed Countries Fund (LDCF) and National Adaptation Programmes of Action (NAPAs)	180
	The Special Climate Change Fund (SCCF)	182
	Strategic Priority on Adaptation (SPA) under the GEF Trust Fund	184
	Community-Based Adaptation Programme	185
	6.5.4 The World Bank's Pilot Programme for Climate Resilience (PPCR)	185
7	Linkages between mitigation and adaptation in drylands	187
	References	193
	Annexes	204
	Annex 1 – Delineation of drylands	204
	Annex 2 – Delineation of sub-continental regions as defined	
	by the IPCC	206
	Annex 3 – The emissions scenarios of the IPCC Special Report	
	on Emissions Scenarios	208
	Annex 4 – Exposure profiles – a practical tool for climate-proofing	209
	List of abbreviations	215
	List of tables	218
	List of figures	219
	List of boxes	220
	Authors	222