

Table of Contents

Key Findings	4
Author List	6
Recommended Citations	10
1 The Hamburg Climate Futures Outlook 2024: Goals and Structure	16
2 The Plausibility of Climate Futures: Explaining the Methodology	20
3 The Plausibility of Achieving Deep Decarbonization by 2050	28
3.1 The Social Plausibility Assessment Framework	28
3.2 UN Climate Governance	32
3.3 Transnational Cooperation	36
3.4 Climate-Related Regulation	39
3.5 Climate Activism and Social Mobilization	42
3.6 Climate Litigation	46
3.7 Corporate Responses	49
3.8 Fossil-Fuel Divestment	52
3.9 Consumption Trends	54
3.10 Media Debates	58
3.11 Knowledge Production	61
3.12 Summary of Social Driver Assessments	64
Box I The Implications of Degrowth Scenarios for the Plausibility of Climate Futures	68
Box II The Costs of Military Spending, Wars and the Plausibility of Climate Futures	70
4 Regional Climate Variability and Extremes: Challenges for Adaptation	74
4.1 Introduction	74
4.2 Single-Model Initial-Condition Large Ensembles Quantify Internal Climate Variability and its Changes	75
4.3 Are Recently Observed Heavy Precipitation Extremes Realistically Represented by State-of-the-Art Spatial Resolutions of Global Climate Models?	79
4.4 High-Impact Marine Heatwaves	83
4.5 How Will Extreme Heat in the World's Breadbasket Regions Change in the Future?	87
4.6 Summary	91
5 Sustainable Climate Change Adaptation: Insights and Reflections from the Field	96
5.1 Introduction	96
5.2 Toward Plausible Sustainable Climate Change Adaptation in Urban, Rural, and Coastal Areas	100
5.3 Hamburg, Germany	104
5.4 São Paulo, Brazil	109
5.5 Ho Chi Minh City, Vietnam	114
5.6 Rural Areas of Northeast Lower Saxony, Germany	117
5.7 Rural Communities in Nepalese Highlands, Nepal	120
5.8 Pastoralists in Kunene, Namibia	124
5.9 Coastal Adaptation in North Frisia, Germany	127
5.10 Small Islands Adaptation in the Maldives	131
5.11 Coastal Adaptation in Taiwan	134
5.12 Conclusion and Assessment	138
6 Integration and Synthesis of Assessments	146
Box III Toward an Inclusive and Connected Repertoire of Climate Action	152
7 Implications for Shaping Climate Futures	156
References	160
Imprint	215

Table of Contents for Figures and Tables

Table 2.1: Learning Assessment: Conceptual developments between Outlook versions	24
Figure 3.1: Social Plausibility Assessment Framework	31
Figure 3.2: Global carbon inequality	55
Figure 3.3: Global inequality of individual emissions	56
Figure 3.4: Climate actions mentioned or demanded in media reporting on climate futures	61
Figure 4.1: Schematic of the MPI-GE	78
Figure 4.2: Representation of observed heavy precipitation extremes	81
Figure 4.3: Representation of the heavy precipitation extreme observed in Mirante de Santana, São Paulo City	82
Figure 4.4: Time series of annual marine heatwave days	86
Figure 4.5: Ensemble probability for a heatwave to occur in Northern Namibia	89
Figure 4.6: Ensemble probability for a heatwave to occur during the same maize growing season	90
Figure 5.1: Case study locations and climate change effects	100
Table 5.1: Case studies – Basic information	102
Figure 5.2: Hamburg, Germany	107
Figure 5.3: São Paulo, Brazil	110
Figure 5.4: Ho Chi Minh City, Vietnam	115
Figure 5.5 Lower Saxony, Germany	118
Figure 5.6: Lake Tsho Rolpa, Nepal	122
Figure 5.7: Kunene, Namibia	125
Figure 5.8: Amrum, Germany	128
Figure 5.9: Beach of Fuvahmulah, Maldives	133
Figure 5.10: Tainan, Taiwan	137
Figure 5.11: Climate change adaptation assessment	141