CHAPTER 1: SOCIO-ECONOMICS 1
1.1 Population 1
1.2 Economic Performance 2
1.3 Poverty 5
1.4 Access to Basic Needs and Services 7
1.5 Education 7
1.6 Health 9
1.7 Employment 11
1.8 Food Security 12
1.9 Environmental Considerations for Socio-Economic Development 13
1.10 Conclusion 18
CHAPTER 2: ATMOSPHERE 21
2.1 Atmospheric Emissions 21
2.2 Emissions in Zambia 26
2.3 Sulphur dioxide (SO2) Emissions 27
2.4 NOx Emissions 29
2.5 Ammonia (NH3) Emissions 30
2.6 PM10 emissions 30
2.7 PM2.5 emissions 31
2.8 Climate Change and Variability in Zambia 31
CHAPTER 3: LAND 41
3.1 Land Tenure 41
3.2 Access to Land 42
3.3 Land use 42
3.4 Agriculture 46

3.5 Forests 49
3.6 Wetlands 49
3.7 Links between Land use Changes and Human Well-being 50
3.8 Conclusion 56

CHAPTER 4: WATER 58

4.1 Water Availability 58
4.1.1 Surface water Potential 61
4.1.2 Groundwater Potential 62
4.1.3 Total Water Resources Potential 63
4.1.4 Change in Ecosystem Processes 63
4.1.5 Wetlands 64
4.2 Water Accessibility 66
4.3 Water Quality 69
4.4 Conclusion 71

CHAPTER 5: BIODIVERSITY 74

5.1 Biodiversity Management 80
5.1.1 Protected areas and in-situ conservation 81
5.1.2 Ex-situ Conservation 84
5.1.3 Indigenous Conservation Practices 84
5.1.4 Deforestation and Habitat Destruction 84
5.2 Conclusion 89

CHAPTER 6: MINERAL RESOURCES 91

6.1 Mineral Exploration 92
6.2 Mineral Exploitation 97
6.2.1 Large-Scale Mining 99
6.2.2 Small Scale Mining and Gemstone Industry 101
6.3 The Link between Mineral Resources and the Environment 104
6.4 Environmental impacts due to mining activities 106
6.5 Conclusion 113

CHAPTER 7: SETTLEMENTS 115

7.1 Migration 115
7.2 Housing 116
7.3 Waste Management 118
7.4 Sanitation 127
7.5 Conclusion 132

CHAPTER 8: EMERGING ISSUES 134
8.1 Genetically Modified Organisms 134
8.1.1 Agenda 21 (Earth Summit of 1992) 136
8.1.2 The Convention on Biological Diversity 137
8.1.3 The Cartagena Protocol on Biosafety 137
8.1.4 Biosafety Regulatory Frameworks 137
8.1.5 International Trade and Genetically Modified Organisms 138
8.1.5 SADC Advisory Committee on Biotechnology and Biosafety 138
8.2 Invasive Alien Species 138
8.2.1 Water Hyacinth 141
8.2.2 Lantana Camara 143
8.2.3 Red Locust 144
8.2.4 Larger Grain Borer 144
8.2.5 Conclusion 144
CHAPTER 9: SCENARIOS AND POLICY OPTIONS 146
9.1 Socio-economics 147
9.1.1 Business as usual Scenario 147
9.1.2 Policy Reform Scenario 150
9.1.3 Investment Scenario 151
9.1.4 Conclusion: 152
9.2 Settlements 152
9.2.1 Business as Usual 153
9.2.2 Policy Reform Scenario 154
9.2.3 Investment Scenario 155
9.2.4 Conclusion 155
9.3 Water Resources 155
9.3.1 Business as Usual 156
9.3.2 Policy Reform Scenario 159
9.3.3 Investment Scenario 159
9.3.4 Conclusion 160
9.4 Land 160
9.4.1 Business as Usual Scenario 160
9.4.2 Policy Reform Scenario 162
9.4.3 Investment Scenario 162
9.4.4 Conclusion 162
9.5 Biodiversity 163
9.5.1 Business as Usual Scenario 163
9.5.2 Policy Reform Scenario 165
9.5.3 Investment Scenario 165

9.6.4 Conclusion 168
9.7 Atmosphere 169
9.7.1 Business as Usual Scenario 169
9.7.2 Policy Reforms Scenario 169
9.7.3 Investment Scenario 172
9.7.4 Conclusion 172
172